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COLOUR DISPLAY

REFERENCE CALIBRATOR® 121 (Version 4)

Technical Manual

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V5987061 August 1996

SERVICE SAFETY PRECAUTIONS

WARNING: X-RADIATION

X-RADIATION CAN BE CAUSED IF CRITICAL COMPONENTS ARE REPLACED BY NON-CONFORM COMPONENTS. THESE COMPONENTS ARE MARKED IN THIS SERVICE MANUAL BY AN * .

WARNING: SAFETY

ELECTRIC SHOCK OR FIRE HAZARD CAN BE CAUSED IF CRITICAL COMPONENTS ARE REPLACED BY NON-CONFORM COMPONENTS. THESE COMPONENTS ARE MARKED IN THIS GUIDE BY A ⚠ SIGN.

REPLACE WITH CONFORM TYPES ONLY!

1. Comply with all caution and safety-related notes on or inside the instrument cabinet, on the chassis, or on the picture tube.

2. When service is required, maintain correct lead dress and parts placement. Extra precaution should be taken to assure proper lead dress in the High Voltage circuit area.
Where a malfunction has occurred, those components or circuits that indicate evidence of abnormality should be replaced or corrected. Always use the manufacturer's safety specified replacement components.

3. Do not remove, install or handle the picture tube in any manner unless shatter-proof goggles are worn. People not so equipped should be kept away when picture tubes are handled. Keep the picture tube away from the body while handling.

4. Protective shields are provided on this chassis for the protection of both the service technician and the costumer.
Protection shields removed for service convenience must be reinstalled correctly and ANY MISSING SHIELD MUST BE REPLACED. DO NOT OPERATE THIS INSTRUMENT WITHOUT THE PROTECTIVE SHIELDS IN POSITION AND PROPERLY SECURED.

5. After any service intervention, the service technician must be sure that no protective device built into the instrument by the manufacturer has become defective, or inadvertently defeated during servicing. Therefore, the following checks are recommended for the continued protection of the costumer and service technician.

GROUNDING CONTINUITY TEST

- Remove main plugs from wall outlet.

- With an Ω-meter in its lowest resistance range, measure resistance between the grounding prong of the mains plug and all accessible conductive parts.
THE METER MUST BE READ ZERO OHM.

- The mains plug still being removed from the wall outlet, switch on the instument.
- Switch an Ω-meter in its highest resistance range, measure resistance between the grounding prong of the mains plug and the two other prongs of the mains plug.
BOTH METER READINGS HAVE TO BE MORE THAN 5 MEGOHM (5 MΩ).
ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE, THE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND CORRECTIVE ACTION MUST BE TAKEN BEFORE RETURNING THE INSTRUMENT TO THE COSTUMER.

X-RADIATION AND HIGH-VOLTAGE LIMITS

The primary source of X-radiation in solid state display units is the picture tube. The picture tube is specially constructed to limit X-radiation emissions. The shields and mounting hardware for picture tubes have an X-radiation protection function and must be properly in place.
For continued X-radiation protection, the replacement tube must be the same type as the original, including suffix letter. High voltage is maintained within specified limits by the use of close tolerance safety related components/adjustments in the power supply circuit. Refer to the technician X-radiation warning note on the Chassis Schematic and Instrument Labels in the Basic Service Data for specific high-voltage limits of each chassis and X-radiation Protection Circuits. If high voltage exceeds specified limits, check each component specified in the chassis schematic diagram and take necessary corrective action.

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in display units have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by then necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Data and its Supplements and Bulletins. Electrical components having such features are identified by ⚠ or * on the schematics and on the parts lists in this Data and its Supplements and Bulletins. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts lists in this Data and its Supplements and Bulletins, may create shock, fire, or excessive X-radiation.

IMPORTANT NOTE FOR USERS IN THE UNITED KINGDOM:

The wires of the mains lead are coloured in accordance with the following code: Green and Yellow : EARTH
Brown : LIVE
Blue : NEUTRAL

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:
- The wire which is coloured Green and Yellow must be connected to the terminal in the plug which is marked by the letter E of by the safety earth symbol ⏚ or coloured Green and Yellow.
- The wire which is coloured Blue must be connected to the terminal which is marked with the letter N or coloured Black.
- The wire which is coloured Brown must be connected to the terminal which is marked with the letter L or coloured Red.

WARNING: This apparatus must be earthed.

NOTE: This equipment has been tested and found to comply with the limits of a class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

June 1995

DIESES TECHNISCHE HANDBUCH SOLLTE SORGFÄLTIG GELESEN WERDEN BEVOR DIE NETZSPANNUNG ANGELEGT WIRD

ACHTUNG RÖNTGENSTRAHLUNG !!

ERHÖHTE RÖNTGENSTRAHLUNG KANN VERURSACHT WERDEN, WENN BESTIMMTE BAUTEILE DURCH TEILE ERSETZT WERDEN DIE NICHT DER SPEZIFIKATION DES HERSTELLERS ENTSPRECHEN. SOLCHE BAUTEILE SIND IN DIESER WARTUNGSANLEITUNG DURCH EIN * GEKENNZEICHNET.

ACHTUNG SICHERHEIT !!

WERDEN BESTIMMTE BAUTEILE DURCH TEILE ERSETZT, DIE NICHT DER SPEZIFIKATION DES HERSTELLERS ENTSPRECHEN, SO KANN EIN ELEKTRISCHER SCHLAG ODER BRANDGEFAHR DIE FOLGE SEIN. SOLCHE BAUTEILE SIND IN DIESER WARTUNGSANLEITUNG DURCH EIN ⚠ GEKENNZEICHNET.

WARTUNG

VOR DEM ÖFFNEN DES MONITORS IST DIESER AB ZU SCHALTEN !

1. Sämtliche Sicherheitsvorschriften auf der Außen- oder Innenseite des Gerätes bzw. auf der Bildröhre sind zu beachten.

2. Ist eine Wartung erforderlich, so ist die richtige Verdrahtung und die korrekte Einbaulage der Teile zu beachten.
   Es ist besonders darauf zu achten, daß im Hochspannungsbereich eine korrekte Lage gewahrleistet bleibt. Nur solche Ersatzteile verwenden, die der Spezifikation gemäß den Sicherheitsvorschriften des Herstellers entsprechen.

3. Vor dem Ausbau der Bildröhre ist die Anodenleitung und die Anode der Bildröhre gegen den Chassisrahmen zu erden, damit eine vorhandene Ladung abgeleitet werden kann.
   Beim Aus- oder Einbau oder bei sonstiger Handhabung der Bildröhre muß eine Schutzbrille getragen werden. Wer keine derartige Schutzbrille trägt, darf sich nicht in den Bereich aufhalten, wo Bildröhren gehandhabt werden. Bildröhren sind bei ihrer Handhabung vom Körper weg zu halten.

4. Nach erfolgter Wartung muß der Kundendiensttechniker sicher sein daß während der Wartung keine vom Hersteller eingebaute Schutzvorrichtung beschädigt oder unabsichtlich zerstört wurde.
   Es empfiehlt sich daher, zum Schutz der Kunden und des Technikers folgende Kontrollen durchzuführen :

SCHUTZLEITERANSCHLUß UND BERÜHRUNGSCHUTZ

- Netzstecker aus der Steckdose ziehen.
- Mit einem auf kleinsten Widerstandsbereich eingestellten Ohmmeter den Widerstand zwischen der Erdung des Netzsteckers und allen zugänglichen leitenden Teilen messen.
  AM OHMMETER MUß < 0.1 OHM GEMESSEN WERDEN.

- Bei weiterhin gezogenem Netzstecker, das Gerät einschalten.
- Mit einem auf höchsten Widerstandsbereich eingestellten Ohmmeter den Widerstand zwischen der Erdung des Netzsteckers und den beiden anderen Stiften des Netzsteckers messen.
  ES MÜSSEN JEWEILS MEHR ALS 5 MEGOHM ABGELESEN WERDEN.

ERGEBEN DIE MESSUNGEN ABWEICHENDE WERTE, SO KÖNNTE DAS AUF EINE GEFÄHRLICHE BERÜHRUNGSSPANNUNG HINDEUTEN, SODAß ABHILFE GESCHAFFEN WERDEN MUß, BEVOR MAN DAS GERÄT DEM KUNDEN ZURÜCKGIBT.

Die Bildröhre ist Hauptverursacher von Röntgenstrahlung. Sie hat eine besondere Bauform um die Röntgenstrahlung auf ein Mindestmaß zu begrenzen.
Die Ersatzröhre muß vom gleichen Typ sein wie die Originalröhre, damit ein dauerhafter Schutz vor Röntgenstrahlen gewahrleistet ist.
Durch den Einbau von besonders maßgenauen Sicherheits Bauteilen / Abgleichungen im Netzteil wird die Hochspannung innerhalb der angegebenen Grenzwerte gehalten.
Die für Techniker bestimmte warnende Hinweise im Schaltbild, bezüglich der Röntgenstrahlung sowie die bei jedem Gerät aufgeführten Hochspannungsgrenzwerte sind zu beachten.
Liegen die Hochspannungswerte über den dort aufgeführten Höchstwerten, so muß jedes im Schaltbild spezifizierte Bauteil kontrolliert- und die nötige Abhilfe geschaffen werden.

Viele elektrische und mechanische Teile haben besondere Sicherheitsmerkmale. Bauteile die zu dieser Sicherheitskategorie gehören sind in den Schaltbildern und in der Stückliste dieser Wartungsanleitung sowie in den Nachträgen und Technischen Informationen mit einem ⚠ bzw. * versehen.
Der Einsatz von Ersatzteilen, die nicht den Sicherheitsauflagen, denen die Ersatzteile der Stückliste dieser Anleitung, der dazugehörigen Nachträge und technischen Informationen unterliegen, genügen, kann einen elektrischen Schlag, Brand oder eine übermäßige Röntgenstrahlung zur Folge haben.

ACHTUNG : DIESES GERÄT MUß GEERDET WERDEN !!

CAUTION: HIGH VACUUM PICTURE TUBE

IS DANGEROUS TO HANDLE. REFER PLACEMENT TO QUALIFIED SERVICE PERSONNEL.
EMPLOYS X-RADIATION AND INTEGRAL IMPLOSION PROTECTION. REPLACE WITH A TUBE OF THE SAME TYPE NUMBER AND SUFFIX FOR CONTINUED SAFETY.

X RADIATION WARNING

REPLACEMENT OF CRITICAL COMPONENTS OF THIS APPARATUS (PICTURE TUBE AND OTHERS) CAN RESULT IN EXCESSIVE X RADIATION. THESE COMPONENTS ARE MARKED IN THE SERVICE MANUAL BY AN * .

- REPLACE ONLY WITH CONFORM TYPES;
- SEE SERVICE MANUAL FOR HIGH VOLTAGE ADJUSTMENTS INSTRUCTIONS.

CAUTION: TO DETERMINE THE PRESENCE OF HIGH VOLTAGE, TUBE HIGH VOLTAGES MUST BE DISCHARGED TO CHASSIS.

ACHTUNG

Diese in diesem Gerät entstehende Röntgenstrahlung ist ausreichend abgeschirmt.
Beschleunigungsspannung maximal kV.
Ersatz bestimmter Bauteile kann erhöhte Röntgenstrahlung verursachen.
Diese bauteile sind deshalb in der Bedienungsanleitung mit einen * gekennzeichnet. Nur durch baugleiche Bauteile zu ersetzen!
Zulaß. Nummer: BW/ / /Rö

Serial number:	**Beam current:**
Date:	**EHT:**

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SECTION I: SERVICE GUIDE

CHAPTER 1: GENERAL DESCRIPTION

1.1 General

The Reference Calibrator® is a high-precision color display. It is available in two versions: The 120T model with a 20-inch Trinitron picture tube, see manual V598706, and the 121 model with a 21-inch flat-square picture tube (shadow mask).
It is a multiscan display and it automatically switches between 120 V and 220 V operation.
Its internal memory can recall geometry and color settings for 16 different graphics board signals.
It is microprocessor-controlled through which most of the adjustments can be done via the keyboard on the front of the display. The standard version contains: Optisense® unit, Quick Degauss, Ambient Light Control, vertical magnetic compensation, and AKB.

1.2 Control panel

The Control panel allows to control and adjust the Reference Calibrator® display. It contains a number of primary control keys: Picture and Background adjustment, Color temperature selection, Degauss, Calibration, and return to Reference position.
Moreover it contains an LCD panel and four softkeys that allow to perform a large number of other adjustments, logically structured in several menus. The main part of the adjustments is protected by a password. You can enter a user-password, giving access to a limited set of adjustments, or you can enter a factory-password, which is reserved for qualified service personnel. The factory-password gives access to the complete set of adjustments.
You can find the factory-password in the enclosed envelope in this manual.
The LCD panel can be adjusted in two ways: Its backlight intensity can be adjusted by means of the menus on the LCD, and its viewing angle by means of a potentiometer on the Microprocessor board.

1.3 Microprocessor board

The microcontroller on the microprocessor board is the heart of the display. It manages the memory contents, controls a number of other chips through the I^2C bus, drives a 10-bit DAC to generate analog control voltages, generates a number of TTL-level control signals, communicates with the control panel and LCD, handles the communication through serial interface, processes the data from the Optisense®, and measures the frequency from the horizontal and vertical oscillator.
The software that controls the microcontroller is stored in a 64k EPROM. The settings and parameters for the different scanning modes, etc., are stored in a 2k non-volatile RAM. The working memory for calculations, timers, and temporary data buffers, is a 32k RAM.

1.4 RGB board

The RGB board consists of the following parts:
- Input selection
- Automatic sync selection
- Internal white field generator
- RGB amplifiers
- Automatic Kinescope Bias part
- Pulse shaping part

Input selection

The Reference Calibrator® display has two RGB inputs: BNCs and D15. The microprocessor determines the switching between both, according to the setting in the menus on the LCD.
The menus on the LCD also allow to completely switch off one or more video channels.
The video and sync signals on BNC can be manually terminated to 75 Ohm whereas the termination of the D15 connector is fixed.

Internal white field generator

For manual and automatic color adjustment, the Reference Calibrator® display generates a white field pattern.
The internal white field generator delivers three video signals: A separate Red, Green, and Blue channel. In case of color adjustment, the microprocessor switches off the external video signals and switches the internal video signals to the output amplifiers.
The microprocessor also determines the amplitude of the internal video signals: 700mV for Highlights adjustment and 70 mV for Lowlights.
The internal white field generator does not produce any sync signals. Consequently you need to supply an external sync signal during color adjustment.

Automatic sync selection

There are three different ways to synchronize the display to the external and internal video signals: Separate Horizontal and Vertical sync (HS/VS), Combined sync (CS), and Combined sync on the Green channel (SoG).
The Reference Calibrator® display automatically locks to the input sync regardless of the type and without any manual selection.
When the user connects different sync signals at the same time, the display uses the following priority: 1) HS/VS - 2) CS - 3) SoG.
The selected Horizontal and Vertical sync signals are fed to the Deflection board for synchronization and deflection. In case of Combined sync, the combined signal is used as Horizontal sync, and the Vertical sync is separated from the Combined sync by a sync separator.

RGB amplifiers

The selected video signals are processed and manipulated in three separate amplifier stages before being fed to the cathodes of the picture tube. The most important manipulations are the following:

- Set-up elimination to eliminate possible set-up in the video signal
- Picture adjustment, by changing the gain of a voltage-controlled pre-amplifier
- Clamping: After each horizontal sync, the black level of the video signal is clamped to a bias voltage to keep the black level constant. This is done to prevent the video signal from drifting, which would result in unstable brightness of the picture.
- Background adjustment by inserting an adjustable Background pulse in the video signal after each horizontal sync pulse. Consequently the following clamp circuits clamp to the level of the Background pulse, through which the DC-level of the video signal changes. This results in a change of the picture's brightness.
- Lowlights adjustment to adjust the white-balance of the small amplitudes in the video signal.
- Highlights or gain adjustment to adjust the white-balance of the big amplitudes in the video signal. This is done by changing the gain of the output amplifiers.

Automatic Kinescope Bias part

The Reference Calibrator® displays are equipped with three Enhanced AKB systems to stabilize the black level of the picture tube.
The black level of the picture is determined by the so-called cut-off voltage of the three cathodes. This is the voltage at which no electrons run through the picture tube. Normally the video amplifiers are adjusted so that the black level of the video signal is exactly at this cut-off voltage. This is accomplished by clamping: the video black level is clamped to a bias voltage, which is the cut-off voltage.
Now the cathodes have the anoying characteristic that their cut-off level is unstable, which results in color distortion. To avoid this we have a system that automatically changes the bias voltage according to the change of the cathode cut-off voltage. This system is the Enhanced AKB system. The principle is as follows:
During the vertical blanking interval, G1 (picture tube) receives an AKB pulse. This voltage pulse draws a small beam current through the picture tube, which is the result from simultaneous beam currents from the Red, Green, and Blue cathode.
Each beam current causes a similar current in each corresponding output amplifier on the RGB board. These currents, the so-called *AKB currents*, have the same shape as the AKB pulse on G1.
Per channel, the amplitude of the AKB current is measured by the Enhanced AKB system. The result of this measurement is fed back to influence the clamp bias voltage. Should the cut-off voltage of one of the cathodes decrease, then the amplitude of the corresponding AKB current would change. This is measured and fed back so that the bias voltage decreases and the video black level is now at the new cut-off voltage.
Only for service reasons, the AKB system can be disabled and the bias voltage can be manually adjusted by means of the Lowlights adjustment.
In case the AKB system doesn't measure any AKB current, the microprocessor generates the diagnose-message "Cut-off limit" on the LCD display.

Pulse shaping part

The AKB and clamping circuits require many pulses with appropriate timing. They are generated on the RGB board, starting from a number of signals coming from the Deflection board.

1.5 CRT SOCKET

The CRT socket feeds all the necessary signals to the picture tube, except for focus and EHT: The amplified video signals, the filament voltage, the G1 voltage, and the G2 voltage.
The filament or heater is the wire in the neck of the picture tube that emits a cloud of electrons when it is heated. Therefore it is fed by a stable

voltage that is generated on the Power supply board.
The first grid of the CRT (G1) has a triple function. First it is used for blanking: The circuit on the CRT socket generates blanking pulses that draw the G1 voltage to -80V during horizontal and vertical retrace. Consequently the picture tube is perfectly blanked, wich prevents the visibility of retrace lines.
Moreover grid 1 is used for the AKB system: During the AKB interval, i.e., in the middle of the vertical blanking interval, G1 receives a short +5V pulse. This is the AKB pulse that causes the AKB beam current measured by the AKB system on the RGB board.
At last, G1 provides spot suppression: When you switch off the Reference Calibrator® display, G1 is quickly drawn to -175V. Consequently the picture tube is safely blanked, which prevents burn-in of the intense white spot that normally appears when switching off the display.
Grid 2 receives a constant, stable voltage that is generated on the EHT board. The voltage difference between G2 and the cathodes (where the video signals are connected) finally determines the intensity of the beam current through the picture tube.

1.6 Deflection board

The basic function of the Deflection board is to generate two sawtooth-shaped currents: One at the horizontal frequency of the input sync, and one at the vertical frequency. The former is fed to the horizontal deflection coil, and the latter to the vertical deflection coil. The phase, shape and amplitude of the deflection currents can be adjusted to adjust geometric distortions of the picture.
At last, the Deflection board also generates and amplifies the dynamic focus signal and the signals for convergence adjustments.

Horizontal deflection

The horizontal sync signal comes from the RGB board and enters the autolock oscillator circuit. At the output we find a horizontal drive signal at the same frequency of the horizontal sync if this frequency is between 30 and 80 kHz. If it is outside this range, the microcontroller generates a diagnose message on the LCD on the front of the display.
The horizontal drive signal is then fed to the horizontal driver stage, built around a driver transformer with two outputs. These outputs drive two similar horizontal deflection circuits that finally generate a sawtooth-shaped current through the horizontal deflection coil.
A number of circuits around the deflection stage manipulate the deflection current for geometry adjustment: Horizontal linearity, S-correction, horizontal shift, horizontal size, horizontal position, horizontal blanking left and right, horizontal parabola, bowing, trapezium and skewing. Only the horizontal shift adjustment cannot be done from the Adjust menu on the LCD.

Vertical deflection

The vertical sync signal from the RGB board enters the vertical oscillator chip, which generates a vertical sawtooth signal with the same frequency. The vertical sawtooth is then amplified and driven through the vertical deflection coil.
During the flyback, the vertical amplifier receives a higher supply voltage, so that the vertical flyback is much faster.
The adjustments of the vertical deflection are: Vertical size, vertical position, and vertical blanking.
The vertical deflection circuit also generates the pulses that start the AKB measurement.

Protection circuits

The horizontal and vertical sawtooth are continuously sensed. If one or both are no longer present, a message is sent to the microcontroller that finally switches off the EHT to protect the picture tube against spot burn-in.
In that case the microcontroller also generates a diagnose message on the LCD.

Dynamic Focus

The static focus adjustment only improves the focus in one area of the picture tube, mostly in the center. The dynamic focus signal, on the other hand, adjusts the focus on the edges and in the corners.
It is created from the combination of two parabolic signals at horizontal and vertical frequency. Then it is amplified and fed to the Focus block together with the coarse static focus voltage from the EHT board.

Convergence adjustments

The Reference Calibrator® 121 has an external convergence coil for static convergence adjustments. The DC currents for these adjustments are generated on the deflection board, depending on the static convergence settings in the Adjust menu on the LCD.

(The Reference Calibrator® 120T has a more complex convergence adjustment. It has an external Beam Twist Coil (BTC) for top, bottom, and vertical static convergence adjustment. Moreover it has a supplementary connection on the Focus block for horizontal static convergence.)
The drive current for the BTC and the voltage for the

(Focus block are generated on the Deflection board. The horizontal and vertical static convergence adjustments are done through the Adjust menu on the LCD, whereas the top and bottom adjustments are manual, by means of potentiometers on the Deflection board.)

1.7 EHT BOARD

The EHT board generates the 27 kV high tension, a coarse focus voltage of 18 kV, a stabilized Grid 2 voltage, and a 1050 V supply for the dynamic focus amplifier and the static convergence on the deflection board.
A square-wave oscillator controls two FETs that switch the current through a resonance circuit on and off. The result is a voltage of 4.5 kV at the secondary winding of the transformer in the resonance circuit. This voltage is multiplied by a tripler to obtain the 27 kV EHT.
Thanks to a feedback from the tripler, the oscillator frequency is adjusted, through which the EHT is kept stable. The EHT adjust potentiometer influences the feedback, through which it can adjust the EHT.
The oscillator can be switched off by two signals from the Deflection board: EHT Enable switches off the EHT in case one or both deflection currents are absent. Moreover the EHT Enable signal provides a slow start of the EHT.
The EHT is limited: If it increases and reaches a certain value, it is automatically switched off.
In case the EHT is switched off, the microcontroller generates a diagnose message on the LCD.
A certain voltage on the EHT board is a measure for the beam current in the picture tube. This current must be limited to protect the picture tube phosphors. If the measure voltage increases and reaches a certain value, the BCL (Beam Current Limit) signal is activated. This signal goes to the RGB board.
From the resonance circuit on the EHT board, another voltage is multiplied to obtain the 1050V +HT voltage. This voltage is used on the deflection board as supply for the dynamic focus amplifier and the static convergence for the 121T model. It also serves to derive the G2 voltage that is stabilized and fed to the CRT board.
At last, from the EHT tripler the coarse focus voltage is derived and fed to the Focus block.

1.8 FOCUS UNIT

The coarse static focus voltage from the EHT board is divided in the Focus block to obtain the final focus voltage, which can be adjusted by means of two potentiometers on the block. The dynamic focus voltage from the deflection board is coupled onto one of the static focus voltages. *(The Focus block for the Reference Calibrator® model 120T has an additional horizontal static convergence adjustment. The control voltage comes from the deflection board and the adjusted convergence voltage is fed to the convergence coil.)*
The Focus blocks finally contain a G2 voltage connection. This is not used in the Reference Calibrator® displays, as the G2 voltage is generated on the EHT board and stabilized on the Deflection board..

1.9 POWER SUPPLY BOARD

The Power Supply Board consists of three parts: Power Supply 1, Power Supply 2, and Degauss circuit.
The first power supply receives the mains voltage, which can range from 87 to 265 V ac. The power supply automatically adapts to this mains voltage, which is rectified, switched, transformed, and rectified again to obtain the secondary (dc) supply voltages. Those are:

- +80 V (used on RGB board)
- -80 V (CRT socket)
- +15 V (Microcontroller board, Deflection board, RGB board, and EHT board)
- -15 V (Microcontroller board, Deflection board, and RGB board)
- +8 V (Microcontroller board, Deflection board, RGB board, and EHT board)
- Filament voltage (CRT socket)
- ACOK, the voltage for spot protection (CRT socket)

The first power supply additionally contains a slow-start circuit, an overcurrent protection, and an overvoltage protection feedback. A potentiometer in this last feedback circuit allows to adjust the secondary supply voltages.
The second power supply only operates in case the first power supply is operating. It delivers the following secondary (dc) supply voltages:

- +E (EHT board)
- +B (Deflection board)
- +B' (CRT socket, and RGB board)
- Diagnose voltage, indicating faultless operation (Microcontroller board)

Also the second power supply contains an overvoltage feedback in which you can adjust the secondary voltages.
The Quick Degauss circuit generates a sinusoidal, decreasing current through the degauss coil around the picture tube. This current generates an alternating, dying magnetic field that completely removes any remanent magnetism on the metal parts of the picture tube and the display chassis.

The degauss circuit additionally provides Southern Hemisphere Correction to compensate for the earth-magnetic field in the southern hemisphere in the world.
At last the degauss circuit also provides Axial magnetic compensation to compensate for the influence of axial components of static magnetic fields.

1.10 Backboard

The Backboard accomplishes the interconnection between the different boards in the display and the Microcontroller board, that is plugged into the slots on the board.
Moreover the Backboard has an empty slot for possible future extension.

CHAPTER 2 : UNIT AND BOARD LOCATION

The following figures show the location of the units and boards in the Calibrator® 121. Each board is easy accesible and can be replaced in a few minutes. One can find a swapping description in CHAPTER 3 : "MAINTENANCE".

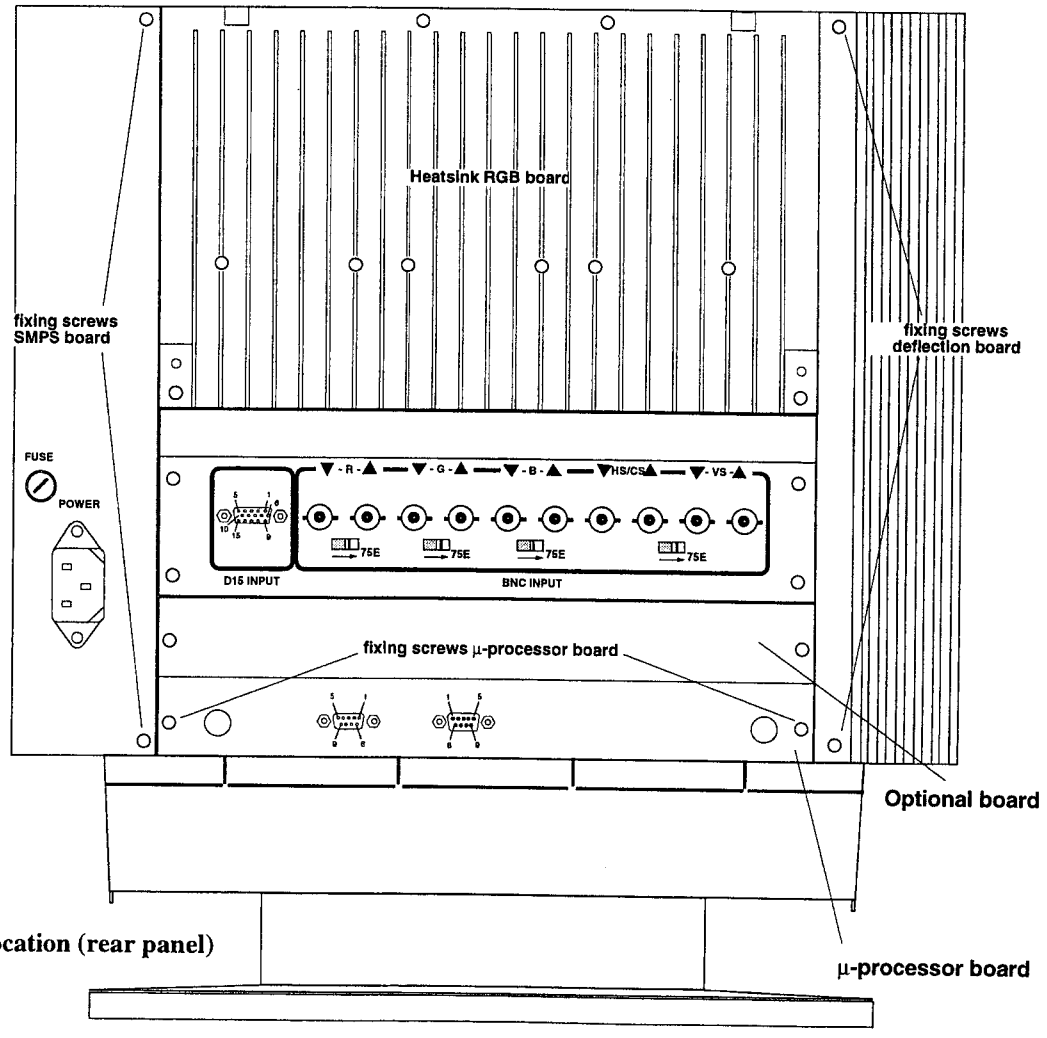
WARNING

Never remove boards or units while the display
is connected to the mains.

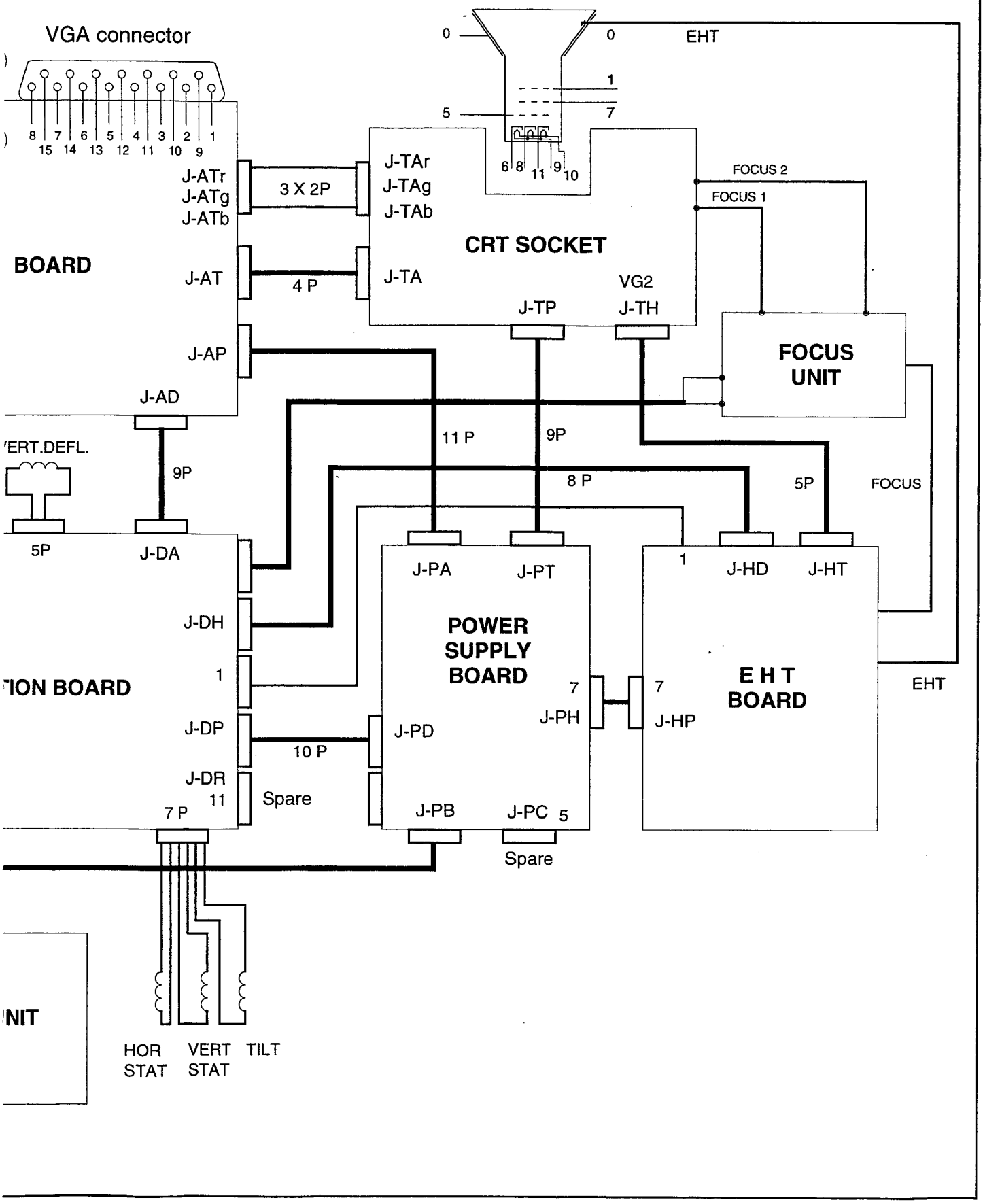
The boards at the rear (PROCESSOR / OPTIONAL) can be plugged out. The boards on both sides (SMPS / DEFLECTION) can be turned out of the display for servicing and repair. To reach the RGB board one had to remove the heatsink at the rear.

CAUTION

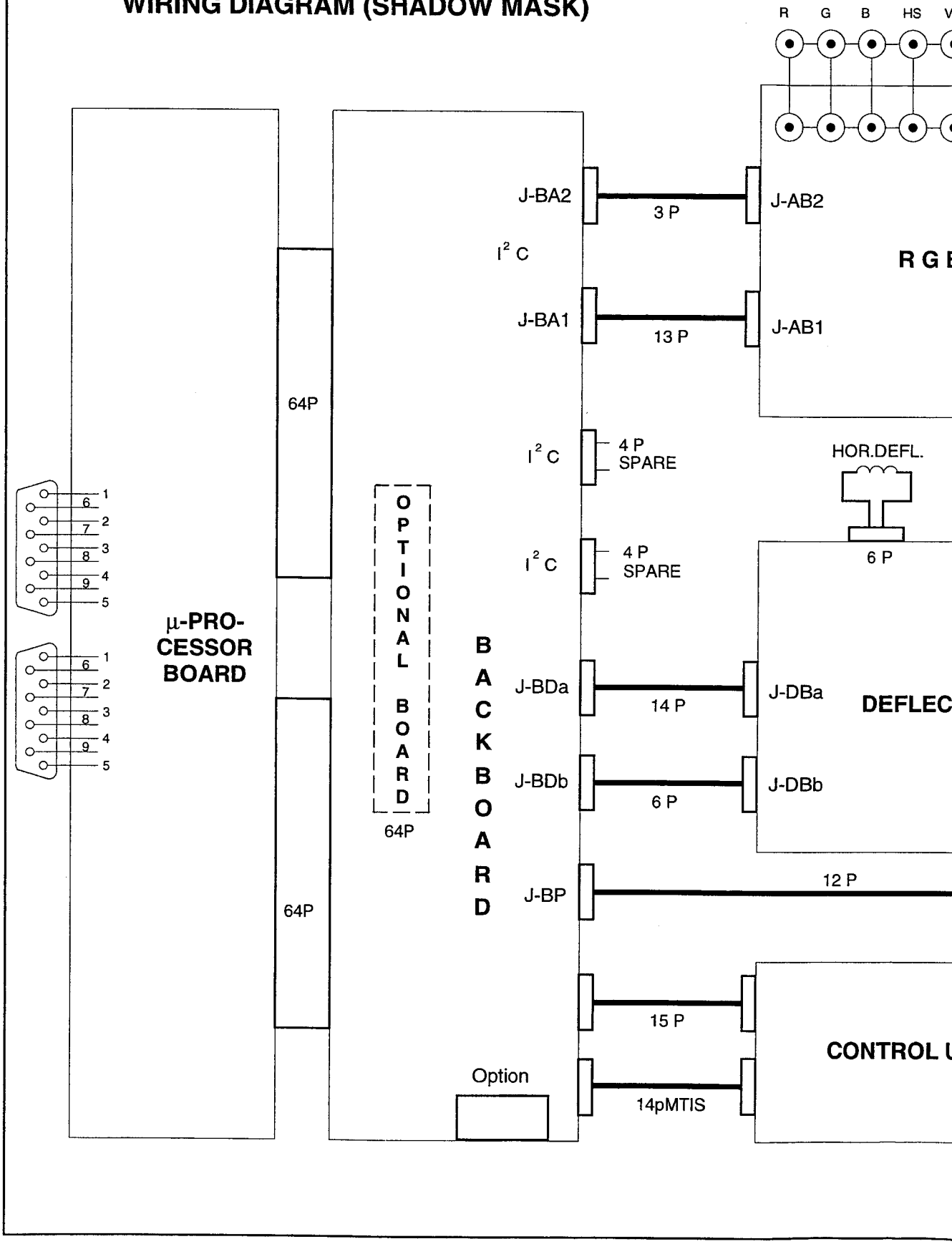
RGB output stages without mounted heatsink
will be damaged after 4 - 5 minutes of operation.

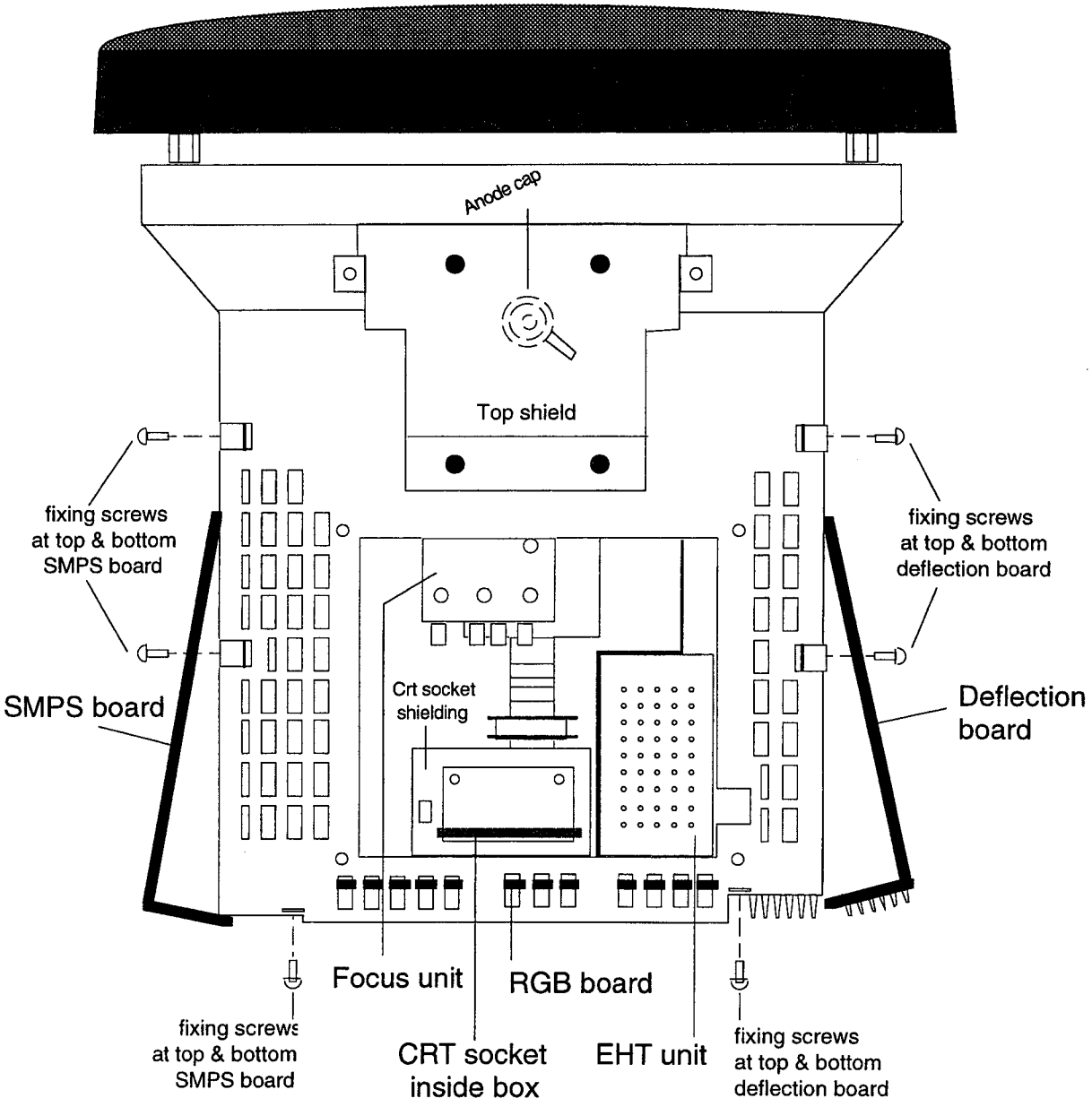


Board location (rear panel)


VGA connector
8 7 6 5 4 3 2 1
15 14 13 12 11 10 9
0
0
EHT
1
5
7
6 8 11 9 10
J-TAr
J-TAg
J-TAb
3 X 2P
CRT SOCKET
FOCUS 2
FOCUS 1
J-ATr
J-ATg
J-ATb
BOARD
J-AT
4 P
J-TA
VG2
J-TP
J-TH
J-AP
FOCUS
UNIT
J-AD
11 P
9P
'ERT.DEFL.
9P
8 P
5P
FOCUS
5P
J-DA
J-PA
J-PT
1
J-HD
J-HT
J-DH
POWER
SUPPLY
BOARD
'TION BOARD
1
7
7
E H T
BOARD
EHT
J-PH
J-HP
J-DP
J-PD
10 P
J-DR
11
Spare
7 P
J-PB
J-PC
5
Spare
NIT
HOR
STAT
VERT
STAT
TILT

WIRING DIAGRAM (SHADOW MASK)





Board location

CHAPTER 3 : MAINTENANCE

3.1 CLEANING:

Clean the picture tube with a soft cloth dampened with mild detergent and water, repeat this with water only and wipe with a dry cloth.

3.2 WHAT TO DO IF :

The display doesn't work

- Check the power connection (rear side).
- If OK: check if the line voltage is present (connect another display, a lamp, ...).
- If OK: check power fuse (located on the rear) be sure of the correct rate.
- If OK: check the signal connections.
- If OK: contact your dealer.

A bad picture is displayed

- Coloured stains in display picture :

  - Check if there are any magnetic sources near to the monitor (e.g., loudspeakers, motors, ..).
  - Eliminate the magnetic fields and push the degauss switch.

- Geometry and centering faults :

  - The geometry isn't adjusted for this scansystem, follow Chapter 4 Adjustments Paragraph Geometry to readjust.
  - The factory adjustments for geometry have been done with the aid of a diapositive slide projection.
  - It is suggested that this method of adjustment is followed in order to meet specification, see Chapter 3 Adjustments Paragraph Geometry.

3.3 BOARD SWAPPING:

WARNING

Disconnect the mains cord to prevent electric shocks.

The processor board and the optional board are accessible at the rear.
The other board are easily accessible by removing the cover, the mechanical shields, turning out some screws and/or pushing the pcb fixing locks. On each board different wired plugs are mounted so it's recommended to slowly open the boards in the sense illustrated in the next figures. Remove the different plugs and follow the description given for each board.

Note : After swapping a board at least readjust that particular board. Its adjustment procedure is described in the adjustment procedure.
To meet the specifications, however, perform the complete adjustment procedure.

3.3.1 Cover mounting

- The cover is fixed to the display by 4 screws, see figure 3.1.
- Unscrew the 4 screws, push with both hands the cover inwards just behind the bezel and slide it backwards.
- Use the same description but in reverse order to mount a cover.

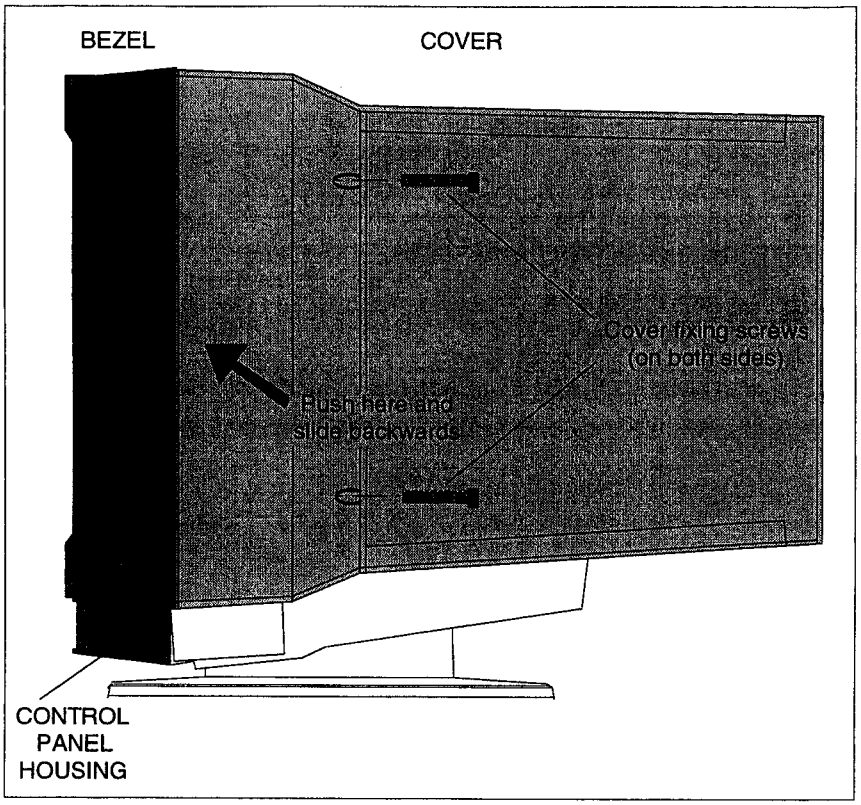


Figure 3.1

3.3.2 Bezel mounting

- The control panel housing is fixed at the bottom of the bezel by 2 screws.
- After the cover is removed, one can start removing the bezel (with control unit).
- Figure 3.2 shows a cover which is slid backwards to show the different screws.
- Loose the bezel bracket fixing screws one or two turns.
- Unscrew the 4 bezel bracket fixing screws completely and remove the bezel (with control unit).
- Disconnect the different connectors and unscrew the control fixing screws to separate the control from the bezel.
- Use the same description in reverse order to mount a control housing and/or a bezel.

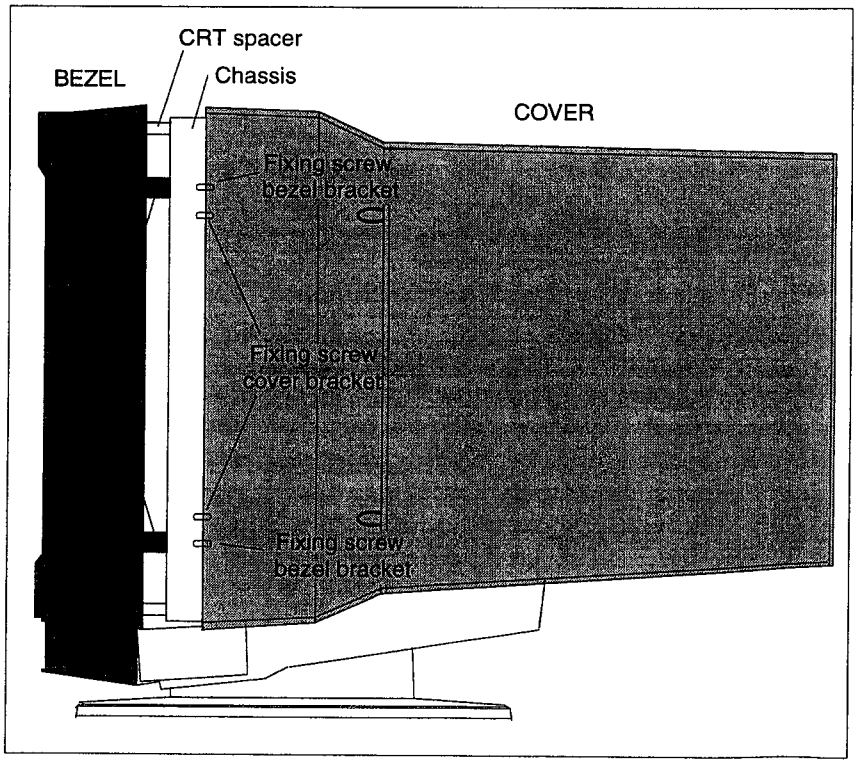


Figure 3.2

3.3.3 Switched Mode Power Supply board swapping

- Remove the cover, see procedure 3.3.1.
- Remove top and right shield.
- Unscrew the 2 fixing screws at the rear (top & bottom) see figure 3.3.
- Unscrew the 4 fixing screws of the PCB (2 on top & 2 on bottom) see figure 3.3.
- Turn the SMPS out of the display.
- Disconnect the different connectors.
- Lift-up the board.
- Replace the board and fix it again using the same procedure but in the reverse order.

3.3.4 Deflection board swapping

- Remove the cover, see procedure 3.3.
- Remove top and left shield.
- Unscrew the 2 fixing screws at the rear (top & bottom) see figure 3.3.
- Unscrew the 4 fixing screws of the PCB (2 on top & 2 on bottom) see figure 3.3.
- Turn the deflection out of the display.
- Disconnect the different connectors.
- Lift-up the board.
- Replace the board and fix it again using the same procedure but in the reverse order.

3.3.5 EHT unit swapping

- The fixing screws of the EHT are located behind the Deflection board.
- Remove the cover, see procedure 3.3.1.
- Remove top and left shield.
- Remove the top shield which covers the anode cap.
- Unscrew the 2 Deflection board fixing screws at the rear (top & bottom) see figure 3.3.
- Unscrew the 4 fixing screws on the PCB (2 on top & 2 on bottom) see figure 3.3.
- Turn the deflection out of the display.
- Disconnect the different connectors of the EHT unit and discharge the anode lead to earth.
- Unscrew the 4 fixing screws of the EHT unit and take it out at the top of the display.
- Replace the EHT unit and fix it again using the same procedure but in the reverse order. An easy focus voltage connections is described in §3.3.8.

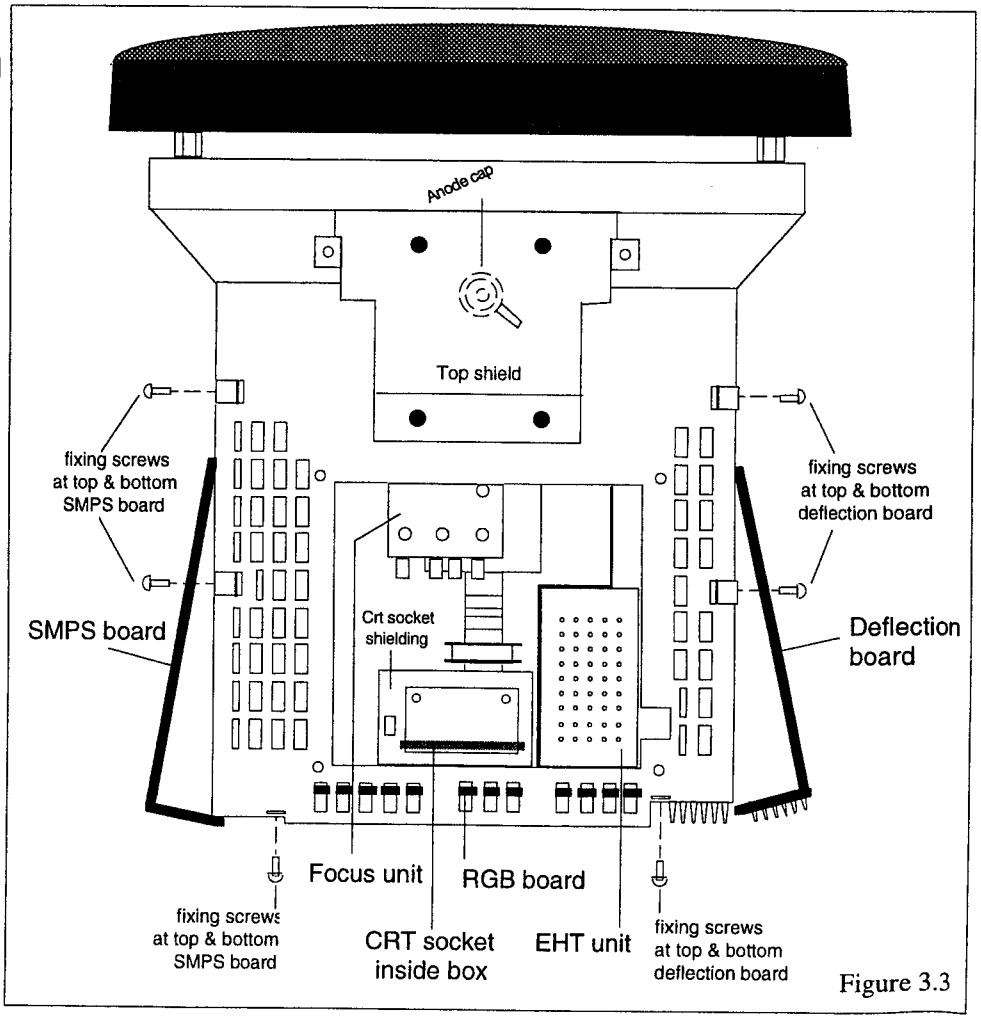

Anode cap
Top shield
fixing screws at top & bottom SMPS board
fixing screws at top & bottom deflection board
SMPS board
Crt socket shielding
Deflection board
Focus unit
RGB board
fixing screws at top & bottom SMPS board
CRT socket inside box
EHT unit
fixing screws at top & bottom deflection board

Figure 3.3

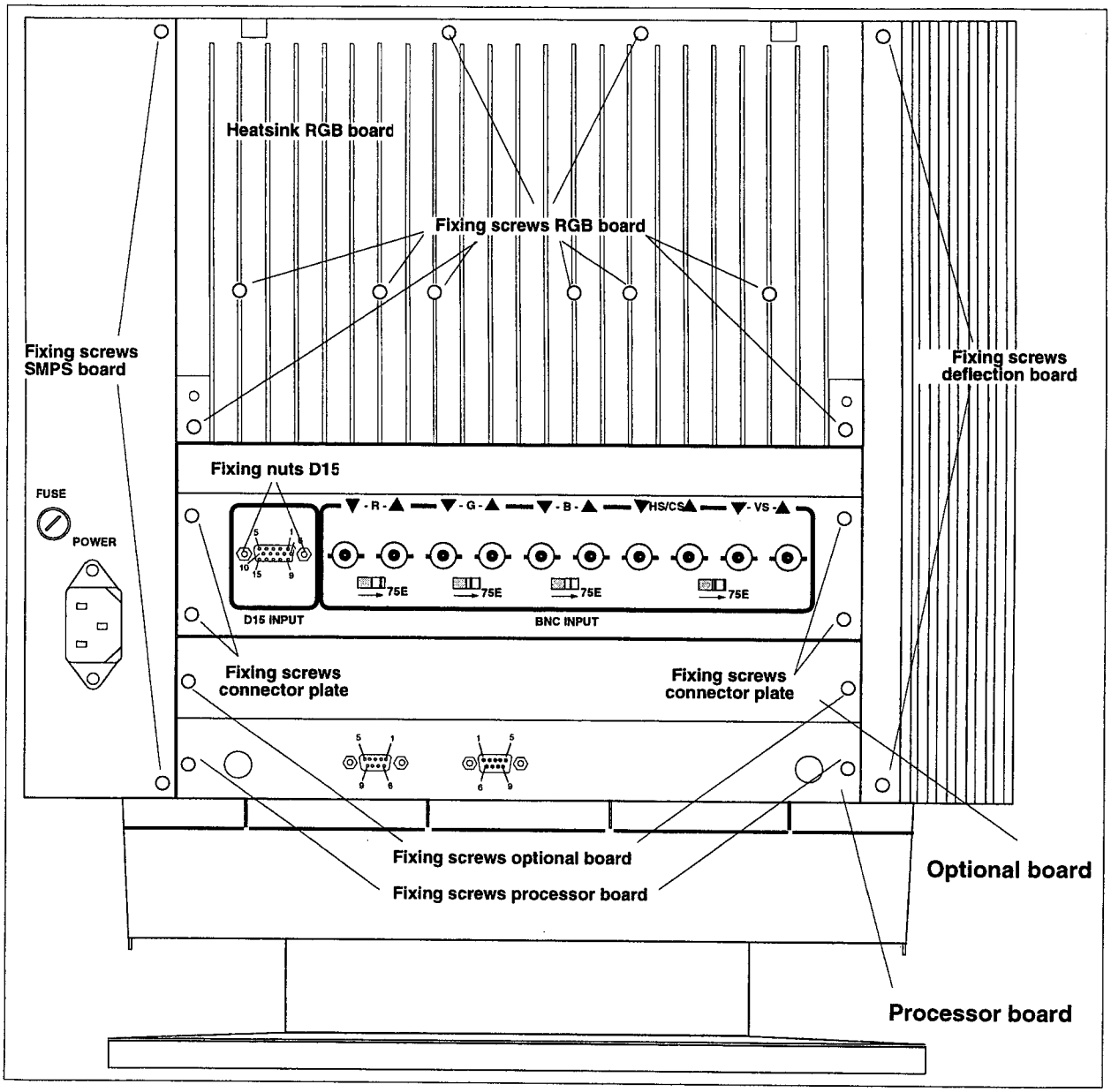


Figure 3.4

3.3.6 Processor board swapping

- Unscrew the 2 fixing screws (see figure 3.4).
- Pull-out the processor board.
- Replace the board and fix it again using the same procedure but in the reverse order.

3.3.7 RGB board swapping

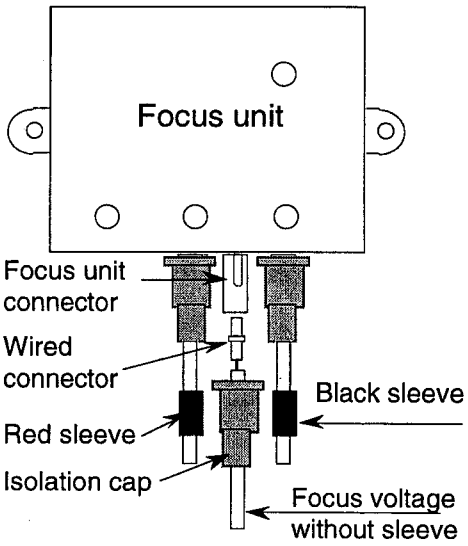
- Remove the cover, see procedure 3.3.1.
- Remove the top shield.
- Remove the plate at the top of the CRT socket shielding
- Unplug the cathode leads as well as the grounding wires at the CRT socket.
- Unscrew the 10 fixing screws of the heatsink and remove it.
- Disconnect the different connectors.
- Unscrew the 4 fixing screws of the connector plate.
- Push the 2 pcb-locks upwards and take the RGB out of the display.
- Replace the board and fix it again using the same procedure but in the reverse order.

Note: Before fixing screws be sure wires are completely free. Wires which are fixed between chassis and heatsink can make short-circuits and will damage the electronic circuitry.

3.3.8 CRT socket replacement

- Remove the cover (see § 3.3.1).
- Remove the top shield.
- Remove the plate, to reach the CRT socket, on top of its shielding house.
- Disconnect the three cathodes, by pulling the wires, and the ground wiring.
- As the CRT socket is reached via the rear of the display; one had to remove first the RGB board (see §3.3.7).
- Disconnect the high voltage wiring on the focus unit; *(3 wires in case of a Trinitron and)* 2 wires in case of a Shadow mask.
- Pull the CRT socket backwards to reach its wiring. Remove the wiring.
- Replace the CRT socket using the same procedure but in reverse order. The easiest way to mount the high voltage wiring to the focus unit is:
  - slide the connector isolation cap backwards (see fig. 3.5)
  - push the wired contact over the contacts of the focus unit
  - slide the connector isolation cap forwards till it surround the connector properly

Figure 3.5

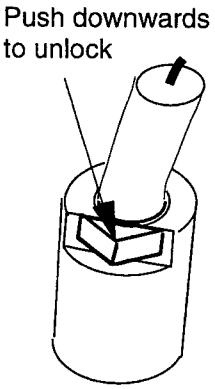


CAUTION

Be sure the aquadag is properly connected to ground via the AMP contact on the CRT socket. Otherwise high voltage sparks will damage electronic circuits.

TIP

High voltage wiring can be disconnected properly by unlocking it first.
Therefore push the key downwards and pull the wire (see figure).



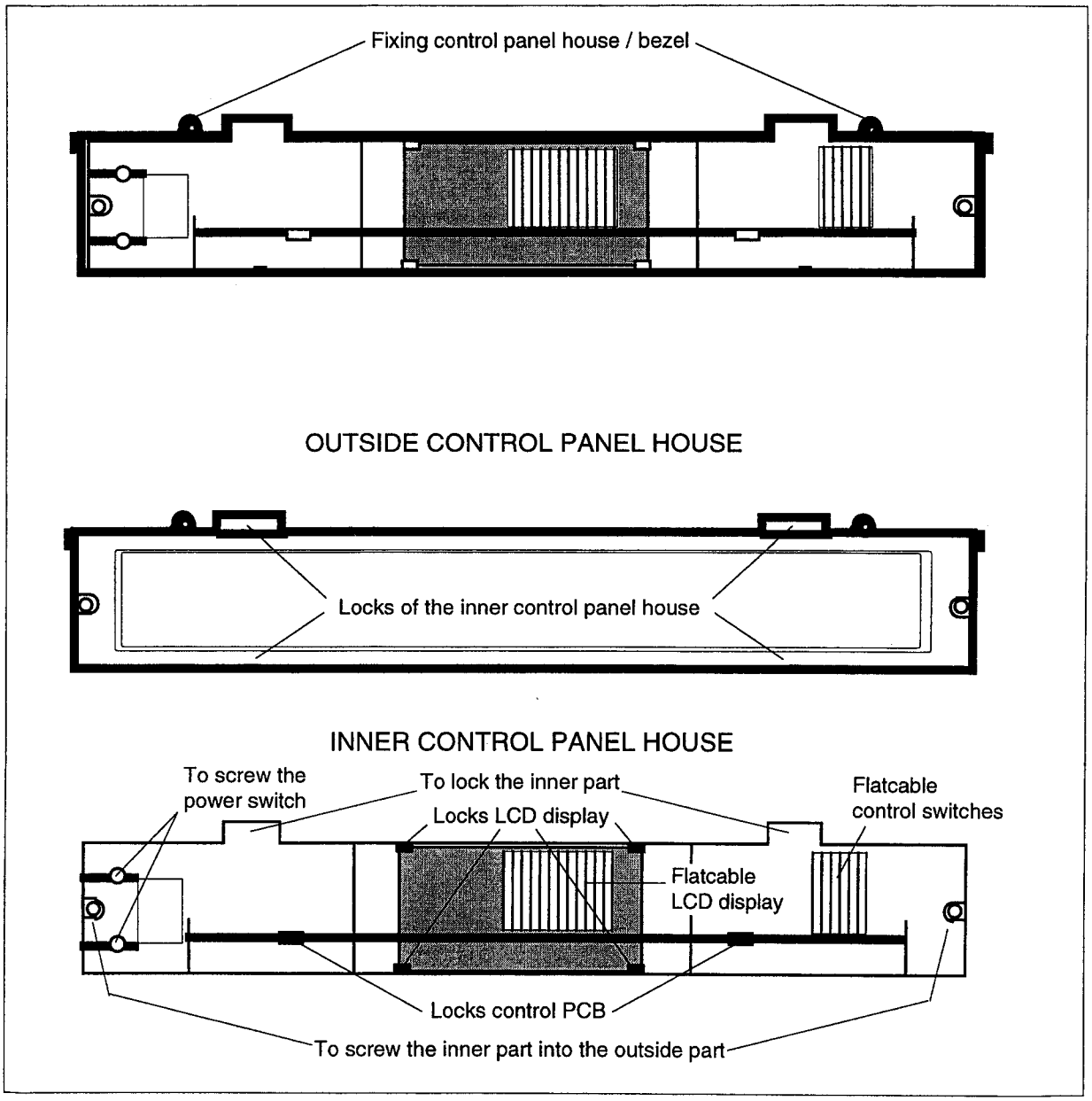
3.3.9 CRT replacement

- The CRT is fixed to the chassis by 4 nuts.
- Remove the cover and the bezel, see procedure 3.3.1 and 3.3.2.
- Remove top and deflection shield.
- Remove the CRT socket (see 3.3.8).
- Remove the EHT anode cap and discharge to earth.
- Remove the other wired connectors.
- Unscrew the 4 nuts.
- If the CRT starts moving out of the chassis, grasp the CRT firmly and take it out of the chassis.

ATTENTION:

Tolerances on the fixation of the CRT lugs and the fixation of the deflection yoke on the CRT neck can cause geometry problems. The displayed picture can have a tilt in order to the mounted bezel. A small rotation of the CRT in order to the bezel is the only possibility.

- Slide the new CRT in the chassis and fix it with the 4 nuts. Do not tighten yet.
- Make all the connections and mount the CRT socket.
- Apply a crosshatch pattern and switch on the display.
- Mount the bezel and check if the displayed horizontal lines run parallel to the bottom line of the bezel.
- If not, remove the bezel and rotate the CRT in the chassis, fix it, mount the bezel and check again.
- If o.k., tighten the 4 nuts, adjust the geometry as described in the Adjustment procedure.
- Mount the shields and cover using the same procedure but in reverse order.


Fixing control panel house / bezel
OUTSIDE CONTROL PANEL HOUSE
Locks of the inner control panel house
INNER CONTROL PANEL HOUSE
To screw the power switch
To lock the inner part
Locks LCD display
Flatcable control switches
Flatcable LCD display
Locks control PCB
To screw the inner part into the outside part

3.3.10 Control panel replacement (see figure above)

- Four items can be replaced; the power switch, the control PCB, the LCD display and /or the control switches.
- The control panel is fixed in an inner control panel house this is mounted into an outside control panel house which is fixed to the bezel.
- Remove the cover and the bezel (see 3.3.1 and 3.3.2).

• Disconnect the wiring.
• Unscrew the two fixing screws to separate the control unit from the bezel.

Power switch:

The power switch can be replaced by unscrewing 2 screws.

Control PCB:

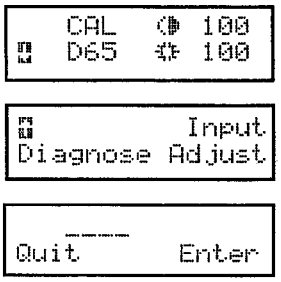
Disconnect the flatcable of the control switches.
Disconnect the flatcable of the LCD display.
The control PCB is held by two locks. Push the locks 2 mm backwards and pull-out the PCB.
Use the same procedure but in reverse order to mount a new PCB.

CHAPTER 4 : ADJUSTMENTS

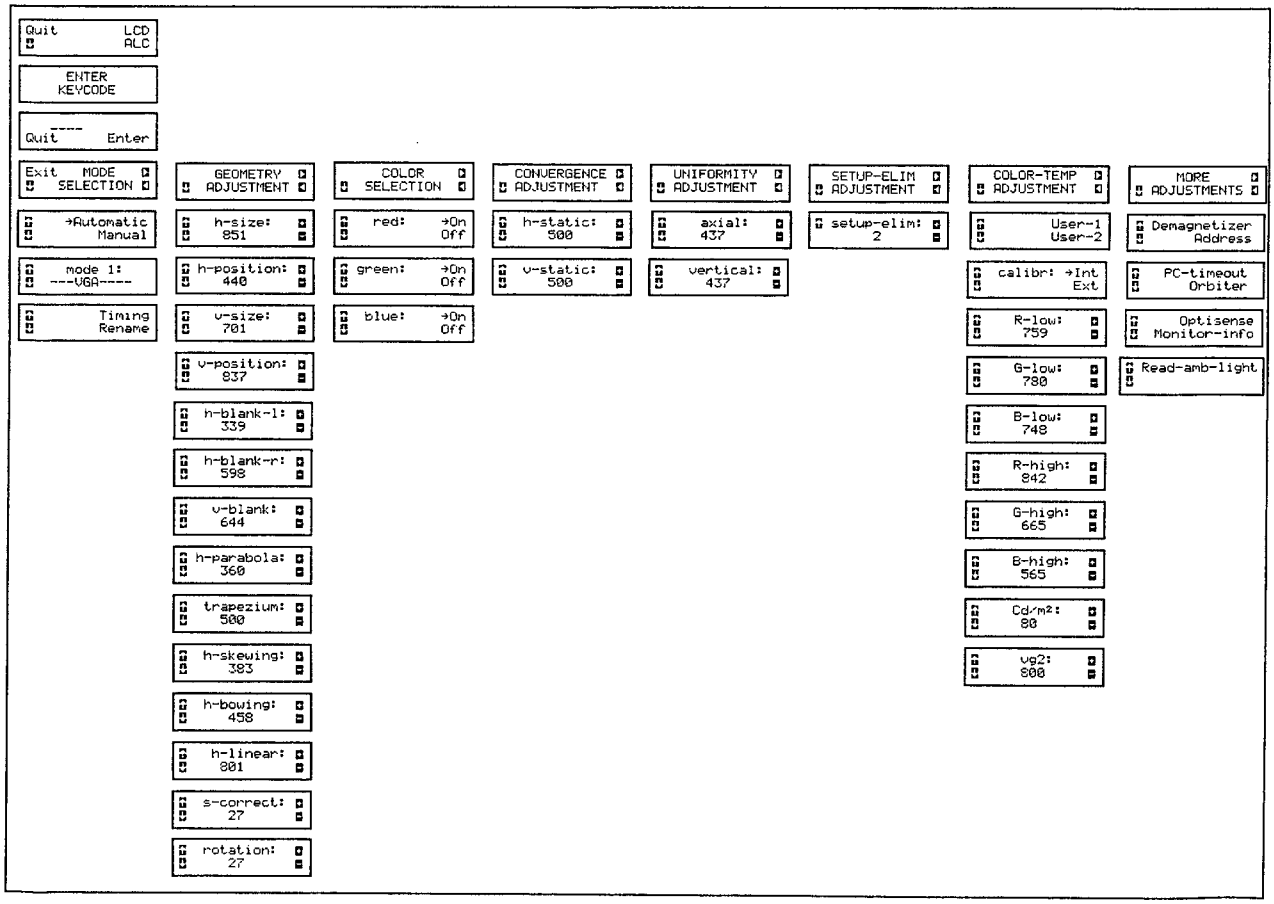
About the Adjust menu on the LCD panel:
A number of adjustments are not hardware adjustments, but can be done by means of the display software. To perform these adjustments, you must enter the Adjust menu on the LCD.
Most of the adjustments are protected by a keycode. There are in fact two possible keycodes: A User keycode and a Factory keycode. The end-user of the display only knows the User keycode. If he enters the User keycode, he has access to a limited set of adjustments. If you enter the factory keycode, you have access to the complete Adjust menu. You can find the Factory Keycode in an enclosed envelope.

To enter the Adjust menu from the main menu:

- From the main menu screen, press the ▯ softkey.
  In the following screen you can select between three sub-menus.
- Press the Adjust softkey to enter the Adjust menu.
  The first screen of the Adjust menu appears.
- Press the ▯ key to enter the keycode-protected adjustments.
  The Enter Keycode screen appears.
- Enter the Factory keycode.
- Press the Enter softkey.



The Adjust menu consists of 8 adjustment items (Mode Selection, Geometry Adjustment, etc.), each containing several adjustments. You can move through the different items by means of the ▯ and ▯ softkeys. You can access the different adjustments in an item by pressing the ▯ and ▯ softkeys. The following figure shows the complete Adjust menu.

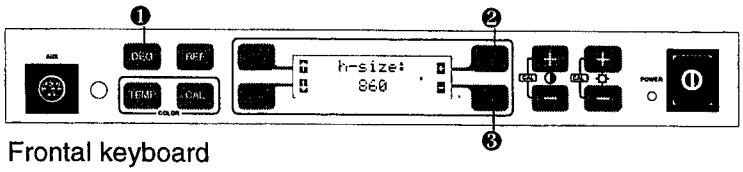


The changes you make in the adjust menu are stored in memory on 4 occasions:

- You quit the Adjust menu by means of Exit.
- You switch to another preset mode.
- You press the CAL key while you are in the Adjust menu.
- The input signal accidentally falls off or changes from frequency.

Keyboard shortcuts
In the Adjust menu you can quickly set the adjustment parameters to maximum, minimum, or mid-value by simultaneously pressing the following keys:

- To maximum: ❶ & ❷
- To minimum: ❶ & ❸
- To mid-value: ❷ & ❸



Frontal keyboard

About adjustment of different preset modes:
The following adjustment procedure is a mixture of hardware and software adjustments. The hardware adjustments (by means of potentiometers and capacitors) need to be done once. The software adjustments (by means of the adjust menu on the LCD) need to be repeated for every preset mode the user will work with.

Sequence of Adjustments :

After replacing a part by a new factory spare part		**After repairing a board**	
Replaced board	**Sequence**	**Repaired board**	**Sequence**
Control panel	4.2.1	Control panel	4.2.1
CRT socket	-	CRT socket	-
Focus block	4.6	Power supply board	4.1
Power supply board	-	Microprocessor board	*
Microprocessor board	4.3.3, 4.4.2, 4.5, 4.6.2, 4.6.3, 4.12	EHT board	4.3, 4.5, 4.12
EHT board	4.3.3	Deflection board	4.4, 4.5
Deflection board	4.4.2, 4. 5	Dynamic focus	4.6.2, 4.6.3
Dynamic focus	4.6.2, 4.6.3	RGB board	4.9, 4.12
RGB board	4.12		
Picture tube	*		
Optisense unit	*		

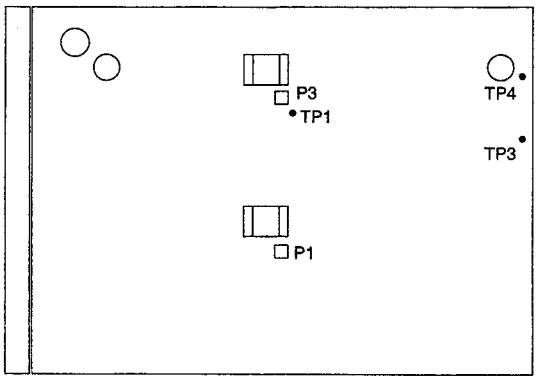
* The Microprocessor board cannot be repaired. Picture tube and Optisense head can only be replaced in Barco. When replaced in the field, the Reference Calibrator® loses its colorimetric accuracy.

The complete Adjustment procedure:

Read the service precautions at the front of this manual before starting the adjustments.
Check for correct installation of the display with regard to input signals.
Disconnect the power, remove the covers to reach the boards and unlock the boards to reach the presets (see illustrations in chapter 3 : Maintenance).
Adjust Background and Picture in its calibrated position.
All measurements have to be performed after a warming-up period of at least 15 minutes.
Apply an AC power voltage between 90 and 135 V or 195 and 265 V.

4.1 SWITCHED MODE POWER SUPPLY BOARD (POWER SUPPLIES)

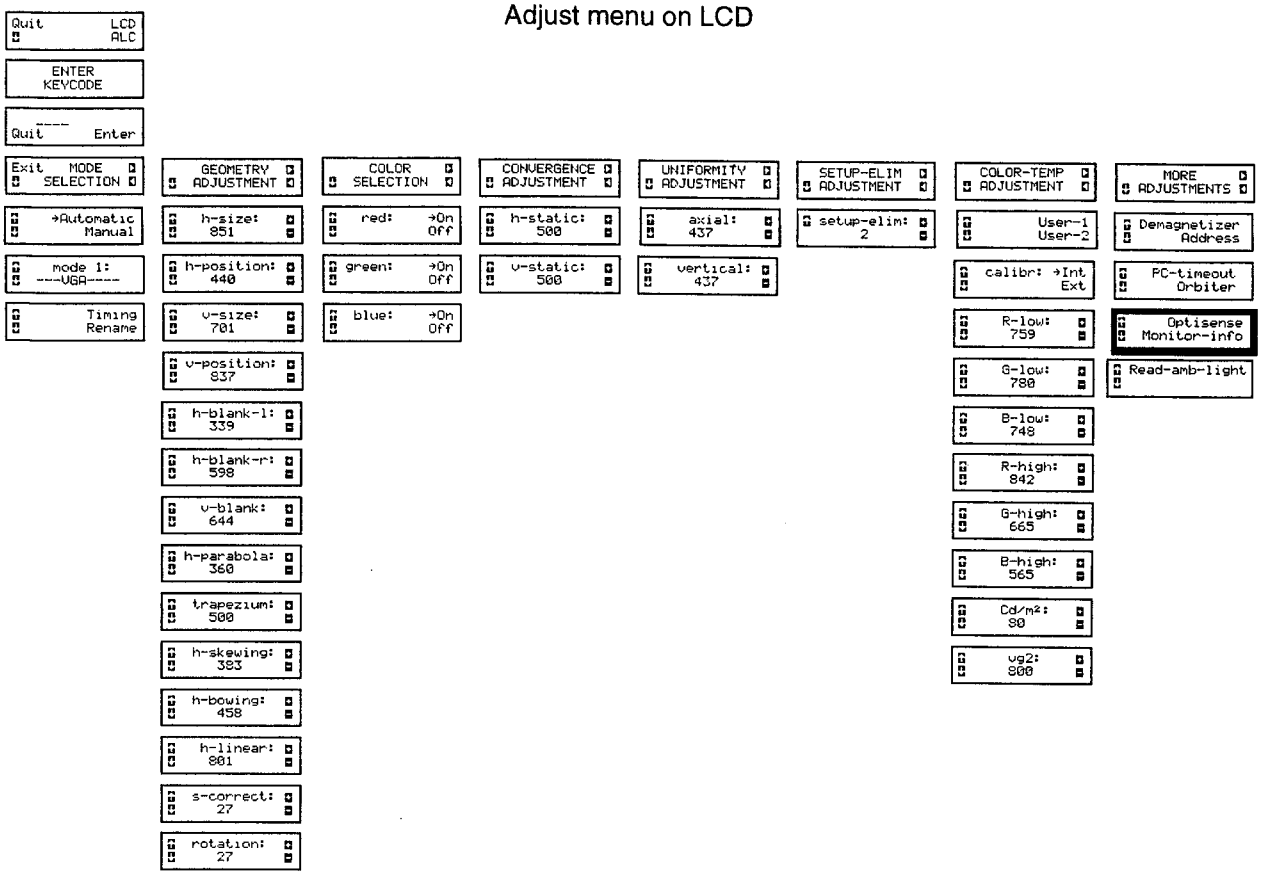
Equipment: DC-voltmeter

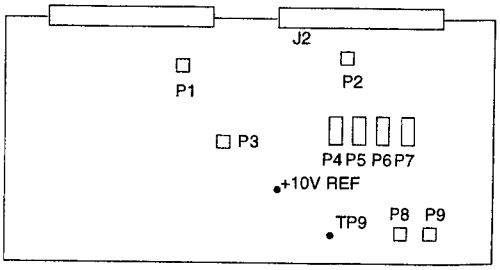
Adjustment	Warnings / Comments
4.1.1 V1 adjustment • Connect a voltmeter between Tp3 (+) and Tp1 (-). • Adjust **P1** for +80 V reading ±0.5 V. (V1 ADJ) 4.1.2 V2 adjustment • Connect a voltmeter between Tp4 (+) and Tp1 (-). • Adjust **P3** for +180 V reading ± 1 V. (V2 ADJ) 4.1.3 Check the other secondary voltages which are not adjustable: -15 V, +6.2 V, +8 V, +15 V, +80 V, -80 V, +180 V, +B (+180V) and +E (+187 V)	

4.2 MICRO-PROCESSOR BOARD

Equipment: Extension board, Oscilloscope, voltmeter, high-precision dc-voltage source

Adjust menu on LCD



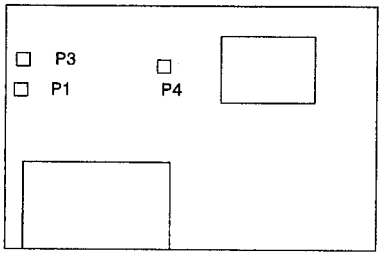
Adjustment	Warnings / Comments
4.2.1 LCD viewing angle • Adjust **P1** on the Processor board for best readability of the LCD characters. 4.2.2 Offset 10 • Enter the Optisense menu under More Adjustments. • Select Set-ranges. • Short-circuit the Optisense® input. • Select range 2. • Connect a probe to Tp9. • Adjust **P8** for 0V (+ 0.01 V). 4.2.3 Offset 1 • Short-circuit the Optisense® input. • Select range 3. • Connect a probe to Tp9. • Adjust **P9** for 0V (+ 0.01 V).	• The adjustments 4.2.2 to 4.2.6 are specialized adjustments. You should only perform them in case you got the proper equipment and skills. • To adjust the Processor board, draw it out of the display and plug it into an extension board. 

Adjustment	Warnings / Comments
4.2.4 +10V reference • Connect probe to the +10V Ref test point. • Adjust **P3** for a voltage of 10.23V (±0.01V). 4.2.5 Setup elimination • Select internal white field by means of the R-high adjustment in the COLOR-TEMP ADJUSTMENT menu on the LCD. • Connect a voltmeter to pin 18c of J2 (setup elim). • Adjust **P2** for 700 mV ±1mV. 4.2.6 Optisense ranges • Disconnect the Optisense® plug on the backboard. • Apply a very accurate voltage source (1% accuracy) to the Optisense® plug on the backboard. • Enter the More Adjustments menu on the LCD. • Enter the Optisense menu. • Select Set-Ranges. • Select Range 3. • Apply a dc-voltage of **5 mV** (±1%) to the Optisense® plug. • Adjust **P7** for a value of 350. • Select Range 2. • Apply a dc-voltage of **50 mV** (±1%) to the Optisense® plug. • Adjust **P4** for a value of 350. • Select Range 1. • Apply a dc-voltage of **500 mV** (±1%) to the Optisense® plug. • Adjust **P5** for a value of 350. • Select Range 0. • Apply a dc-voltage of **5 V** (±1%) to the Optisense® plug. • Adjust **P6** for a value of 350.	

4.3 EHT BOARD (EHT POWER SUPPLY)

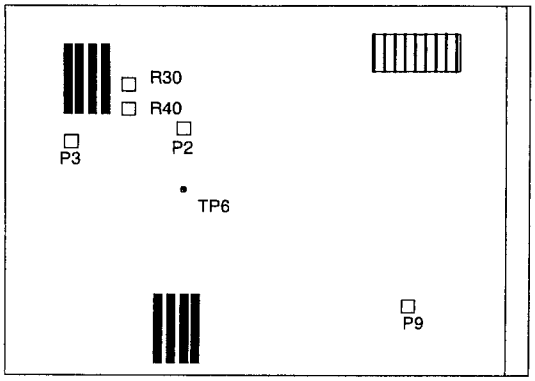
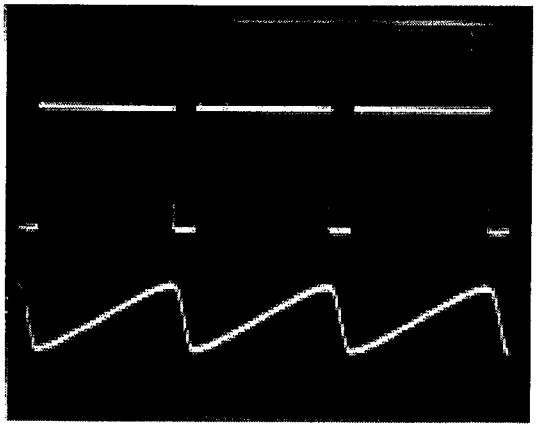
Equipment: Precision high-voltage meter, Thoma color analyzer

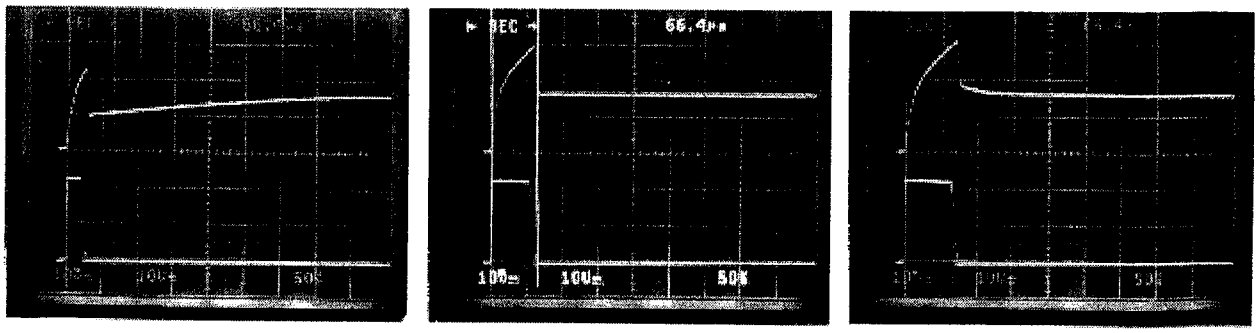
The EHT voltage and EHT limit voltage potentiometers P1 and P4, on the EHT board, are factory adjusted and sealed. Readjustment is only possible after replacement of both potentiometers.
Therefore, first switch off the display.
Connect a precision high voltage meter to the EHT (anode) connection of the CRT. Be sure of the ground connection and set the meter in the appropriate way.
Finally switch on the display again.

Adjustment	Warnings / Comments
4.3.1 EHT limit • Apply a full white video signal and adjust the display for calibrated picture and background position. • Adjust **P4** (EHT limit) counter-clockwise. • Adjust **P1** (EHT adjust) for 29.0 kV (±0.1 kV) reading. • Adjust **P4** (clockwise) till the high voltage switches off (fail safe mode). 4.3.2 EHT adjustment • Switch off the display and turn **P1** clockwise. • Switch on the display and adjust **P1** for 27.0 kV (±0.1 kV) reading. • Seal both potentiometers (P1 and P4). 4.3.3 Beam Current Limit adjustment • Install a Thoma; it will indicate 80 Nit for calibrated Picture and Background and full white video input. • Turn **P3** (BCL) counterclockwise. • Adjust Picture and Background slowly for 130 Nit reading on the Thoma. • Adjust **P3** (BCL) very, very slowly clockwise till the LCD displays UNSAFE OUTPUT.	ϟ This board contains high voltages • The adjustments 4.3.1 and 4.3.2 are specialized adjustments. You should only perform them in case you got the proper equipment and skills. • After readjustment of the EHT it is necessary to readjust geometry and color temperature. 

4.4 DEFLECTION BOARD

Equipment: Oscilloscope

Adjustment	Warnings / Comments
4.4.1 Minimum horizontal frequency • Disconnect the input signals. • Connect an oscilloscope to Tp6 (H. FLYBACK) • Adjust **P9** for a period of 34.2 µs ± 0.1 µs. 4.4.2 Vertical flyback • Set AKB removal to minimum by adjusting **P3.** • Connect an oscilloscope between ground and node R30/R40 (vert. defl. low). • Adjust **P2** (VERT FLYB) as shown in the illustration below. • Adjust **P3** (AKB removal) till the AKB lines become invisible.	⚡ This board contains high voltages   Minimum Horizontal frequency. Lower signal is H. FLYBACK.



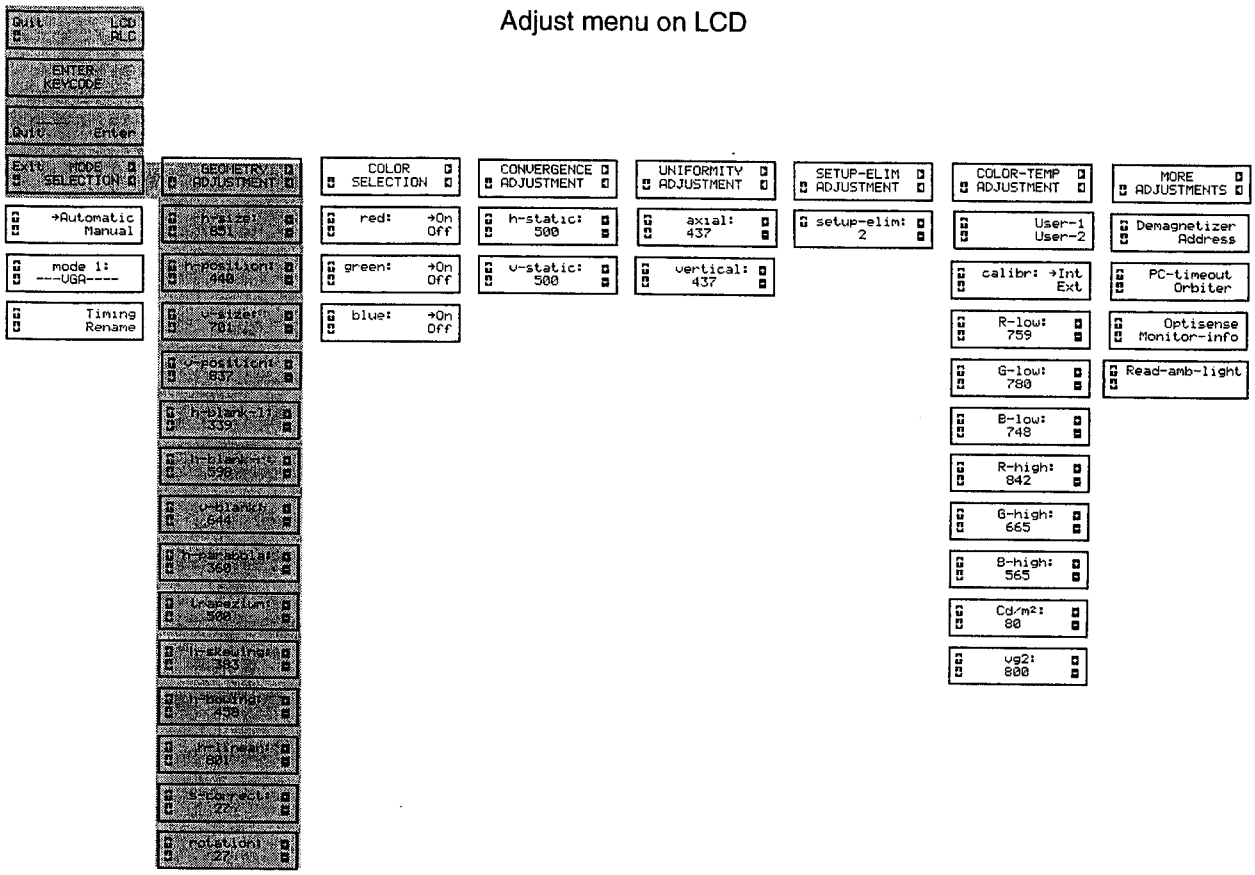
Upper signal: Vertical deflection low, node R30 / R40 Lower signal: Vertical flyback pulse, test pin VFLYB

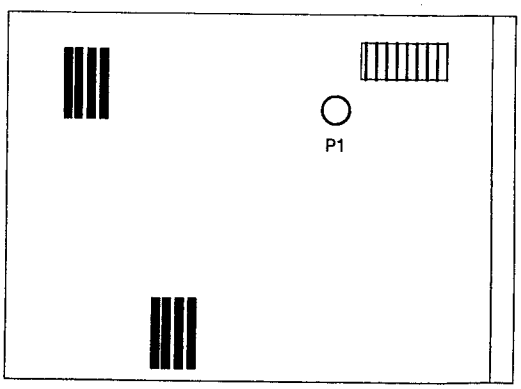
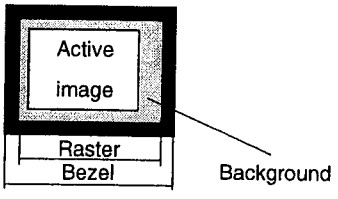
Vertical flyback too short: The vertical deflection sawtooth drops at the end of the slope.	Vertical flyback, adjusted correctly.	Vertical flyback too long: The vertical sawtooth climbs too fast before the end of the slope.

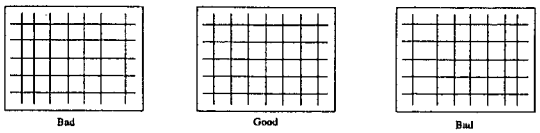
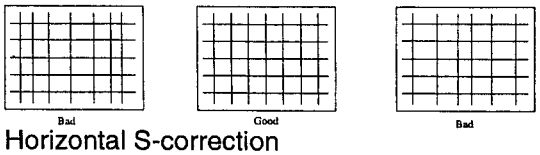
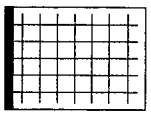
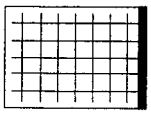
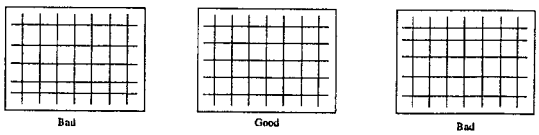
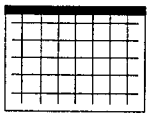
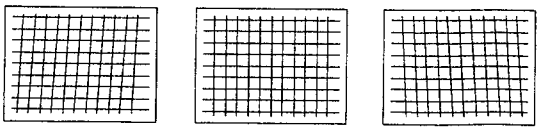
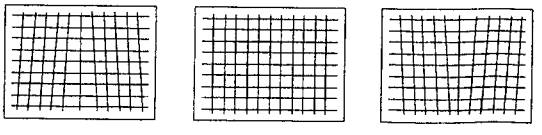
4.5 GEOMETRY

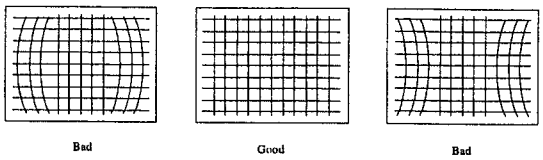
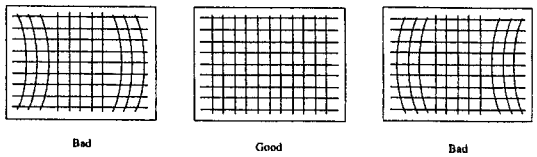
Equipment: Cross hatch pattern generator

Adjust menu on LCD



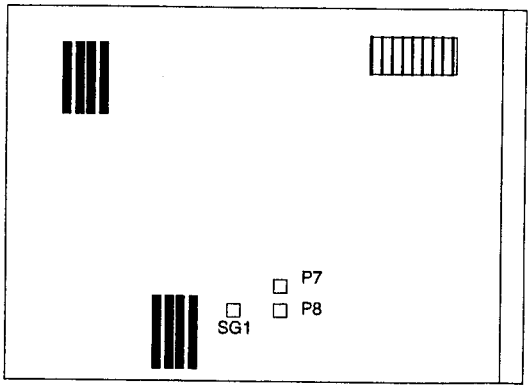
Adjustment	Warnings / Comments
4. 5.1 Horizontal shift • Set Horizontal Blanking Left and Vertical Blanking to min. Set Horizontal Blanking Right to max. • Put Background to maximum to see the complete raster. • If necessary reduce Horizontal Size and Vertical Size to make the complete raster visible. • Adjust **P1** (Horizontal Shift) on the Deflection Board to center the raster horizontally. 4.5.2 Horizontal position • Adjust to position the active image approximately in the center of the picture tube. 4.5.3 Horizontal size • Adjust so that there remains a border of approximately 1 cm left and right of the active image.	This board contains high voltages  Deflection board 

Adjustment	Warnings / Comments
4.5.4 Horizontal linearity 4.5.5 Horizontal S-correction 4.5.6 Horizontal position: Fine adjustment • Adjust to position the active image perfectly in the center. 4.5.7 Horizontal size: Fine adjustment • Adjust the horizontal size according to the table alongside. 4.5.8 Horizontal blanking left • Adjust to blank the visible raster left of the active image. 4.5.9 Horizontal blanking right • Adjust to blank the visible raster right of the active image. 4.5.10 Vertical position • Adjust to position the active image approximately in the center, in the vertical sense. 4.5.11 Vertical size • Adjust so that there remains a border of approximately 1 cm above and under the active image. 4.5.12 Vertical linearity • Adjust **P4** (lin. up) or **P5** (lin. down) on the deflection board to obtain good vertical linearity. 4.5.13 Vertical position: Fine adjustment • Adjust to position the active image perfectly in the center, in the vertical sense. 4.5.14 Vertical size: Fine adjustment • Adjust the vertical size according to the table alongside. 4.5.15 Vertical blanking • Adjust to blank the visible raster above the active image. • Now put Background control in calibrated position again. 4.5.16 Skewing 4.5.17 Trapezium	 Bad Good Bad Horizontal linearity  Bad Good Bad Horizontal S-correction | | Aspect Ratio | 120T | 121 | |---|---|---|---| | Mode 1 (HxV) | 4/3 | 360x270 mm | 373x280 mm | | Mode 2 (HxV) | 4/3 | 360x270 mm | 373x280 mm | | Mode 3 (HxV) | 5/4 | 350x280 mm | 368x294 mm | | Mode 4 (HxV) | 4/3 | 360x270 mm | 373x280 mm | | Mode 5 (HxV) | 4/3 | 360x270 mm | 373x280 mm | | Other modes | 4/3 | 360x270 mm | 373x280 mm | | Other modes | 5/4 | 350x280 mm | 368x294 mm | Horizontal & vertical sizes  Horizontal blanking left IMPORTANT: Hor. blanking left also adjusts the *clamping*. For certain graphics boards (sync on green), adjust Hor. blanking left to obtain proper clamping (background must not be greenish).  Horizontal blanking right  Bad Good Bad Vertical linearity  Vertical blanking  Bad Good Bad Skewing  Bad Good Bad Trapezium

Adjustment	Warnings / Comments
4.5.18 Parabola	 Parabola
4.5.19 Bowing	 Bowing
4.5.20 Parabola: Fine adjustment	
4.5.21 Horizontal position: Final adjustment • Adjust the horizontal position again to compensate for slight changes during the previous adjustments.	
4.5.22 Rotation • Adjust if the complete image is slightly rotated.	

4.6 FOCUS (DEFLECTION BOARD)

Equipment: Cross hatch pattern generator, Oscilloscope

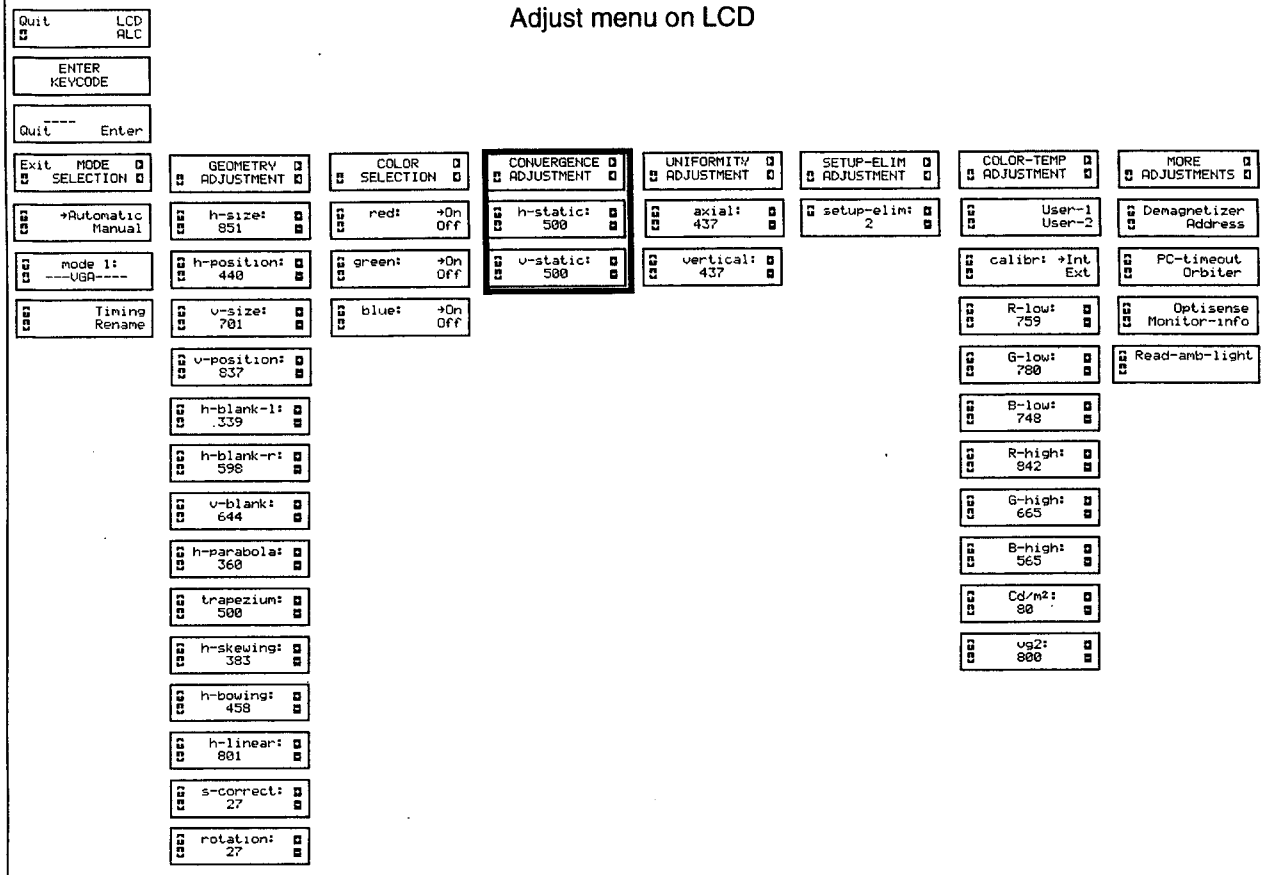
Adjustment	Warnings / Comments
4.6.1 Static Focus • Apply the cross hatch pattern. • Adjust the Focus potentiometer on the Focus block for best focus in the center of the screen (adjustment on sight). 4.6.2 Dynamic focus vertical • Connect the scope to spark gap SG1 on the Deflection board. Measure the vertical parabolas. • Adjust **P7** to obtain an amplitude according to the table alongside. 4.6.3 Dynamic focus horizontal • Measure the horizontal parabolas. • Adjust **P8** to obtain an amplitude according to the table alongside.	 Deflection board • Use a 100/1 probe.

	120T	121
Hor. Parabola	640 V	350 V
Vert. Parabola	330 V	140 V

4.7 CONVERGENCE

Equipment: Cross hatch pattern generator

Adjust menu on LCD

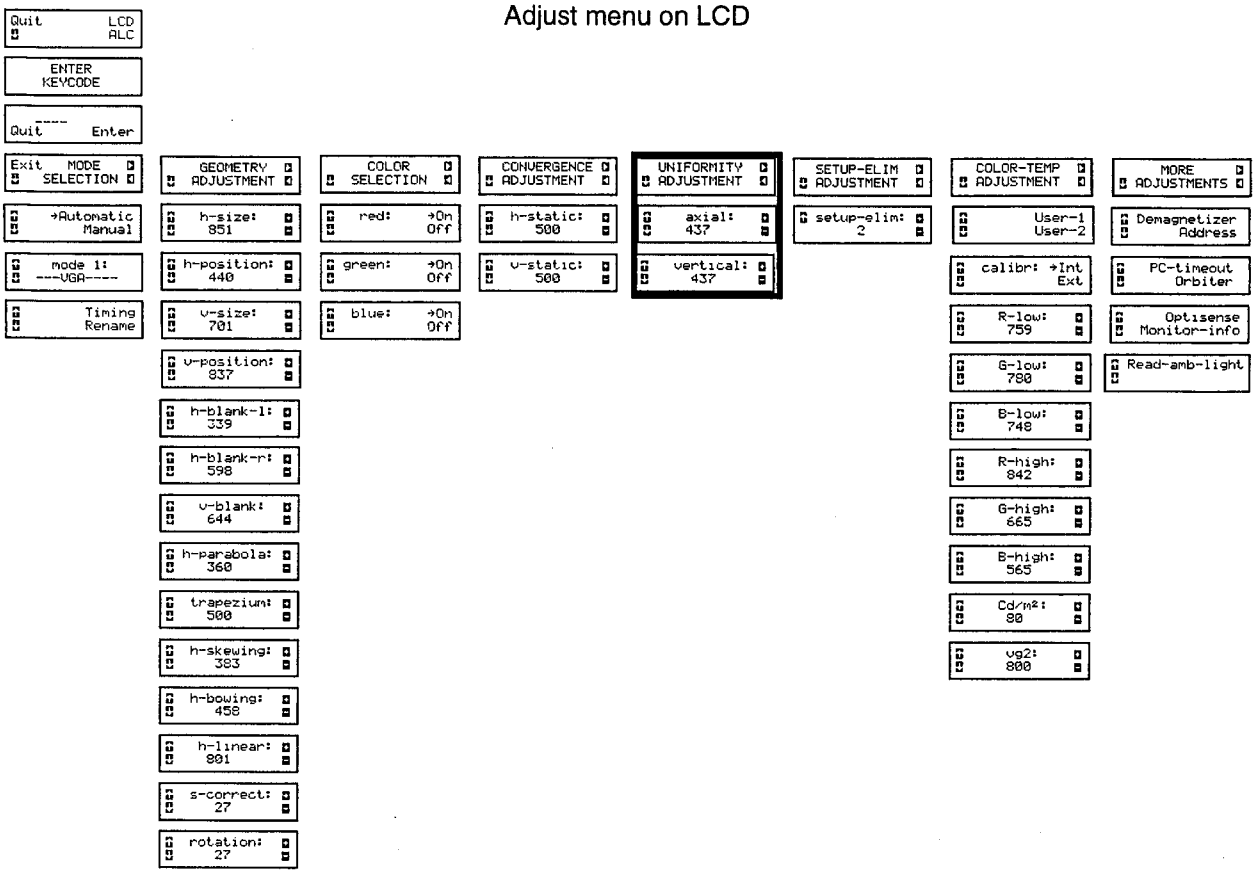


Adjustment	Warnings / Comments
4.7.1 Horizontal static convergence • On the LCD, enter the Convergence Adjustment menu. • Observe the vertical lines of the cross hatch pattern. • Adjust to position the blue and red vertical lines on top of the green ones. Adjust for best convergence in the center of the screen. 4.7.2 Vertical static convergence • Observe the horizontal lines. • Adjust to position the blue and red horizontal lines on top of the green ones. Adjust for best convergence in the center of the screen.	

4.8 WHITE UNIFORMITY

Equipment: White field generator

Adjust menu on LCD



Adjustment	Warnings / Comments
4.8.1 Axial Uniformity • Demagnetize the display. • Apply a uniform white field covering the whole screen. • Enter the Uniformity Adjustment menu. • Adjust Axial Uniformity to obtain a uniform white field without dark spots.	• Axial Uniformity adjustment compensates for axial components of disturbing magnetic fields. The result of this adjustment may be a slight rotation of the picture.
4.8.2 Vertical Uniformity • Adjust Vertical Uniformity to obtain a uniform white field without dark spots.	• Vertical Uniformity adjustment compensates for vertical components of disturbing magnetic fields, such as the earth magnetic field in the southern hemisphere or static magnetic fields. • After each change of Vertical Uniformity, the display will automatically degauss to have effect.

4.9 RGB BOARD

Equipment: Oscilloscope with a 2 pF (100/1) probe, Cross hatch pattern generator

Adjustment	Warnings / Comments

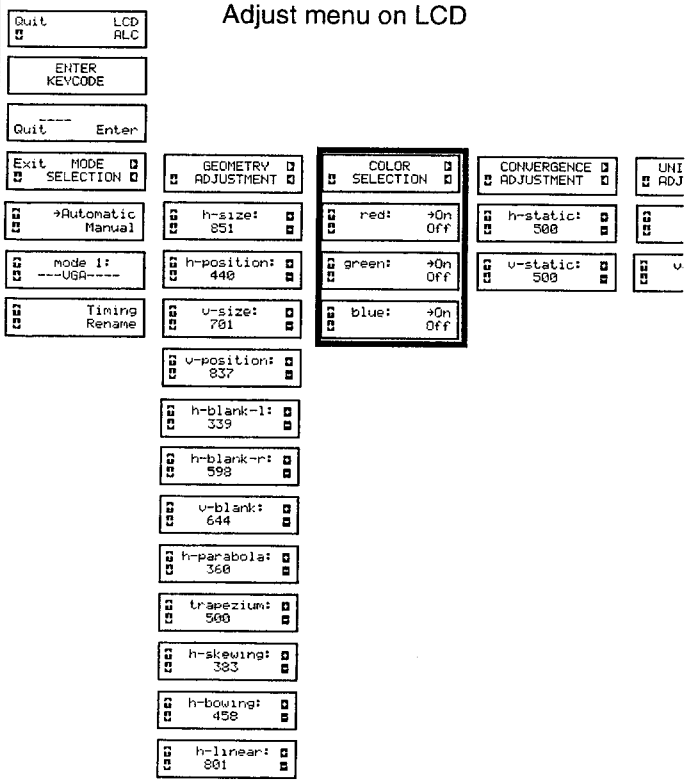
4.9.1 Frequency response

- Connect oscilloscope with 2pF (100/1) probe to Tp1 of the CRT socket.
- Adjust **C233** (red channel) on the RGB board for an overshoot smaller than 15% (see next figure).
- Connect oscilloscope to Tp2 of the CRT socket.
- Adjust **C433** (green channel) for an overshoot smaller than 15% (see next figure).
- Connect oscilloscope to Tp3 of the CRT socket.
- Adjust **C633** (blue channel) for an overshoot smaller than 15% (see next figure).

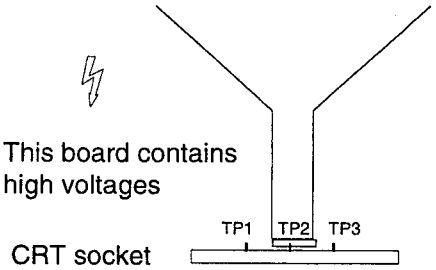
4.9.2 Streaking adjustment

- Apply a crosshatch test pattern signal, white lines on a black background.
- Observe the horizontal lines in the middle of the screen.
- Switch off the Green and Blue channel by means of COLOR SELECTION on the LCD.
- Adjust **P200** for minimum visual red smearing.
- Switch off the Red and Blue channel.
- Adjust **P400** for minimum visual green smearing.
- Switch off the Red and Green channel.
- Adjust **P600** for minimum visual blue smearing.

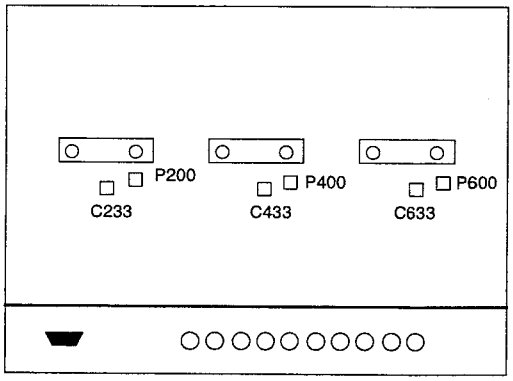
Adjust menu on LCD



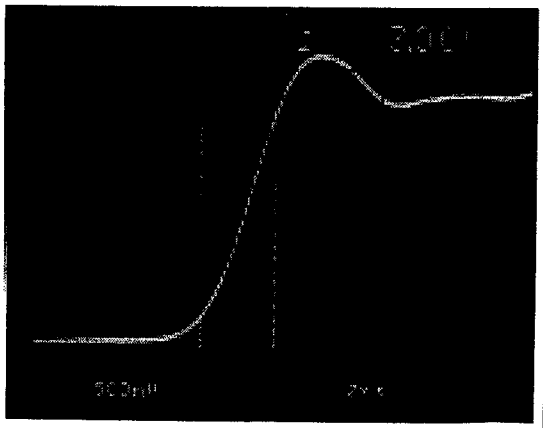
The adjustment 4.9.1 is a specialized adjustment. You should only perform it in case you got the proper equipment and skills.



CAUTION: The RGB amplifiers will break after 10 minutes of operation without heatsink!



RGB board

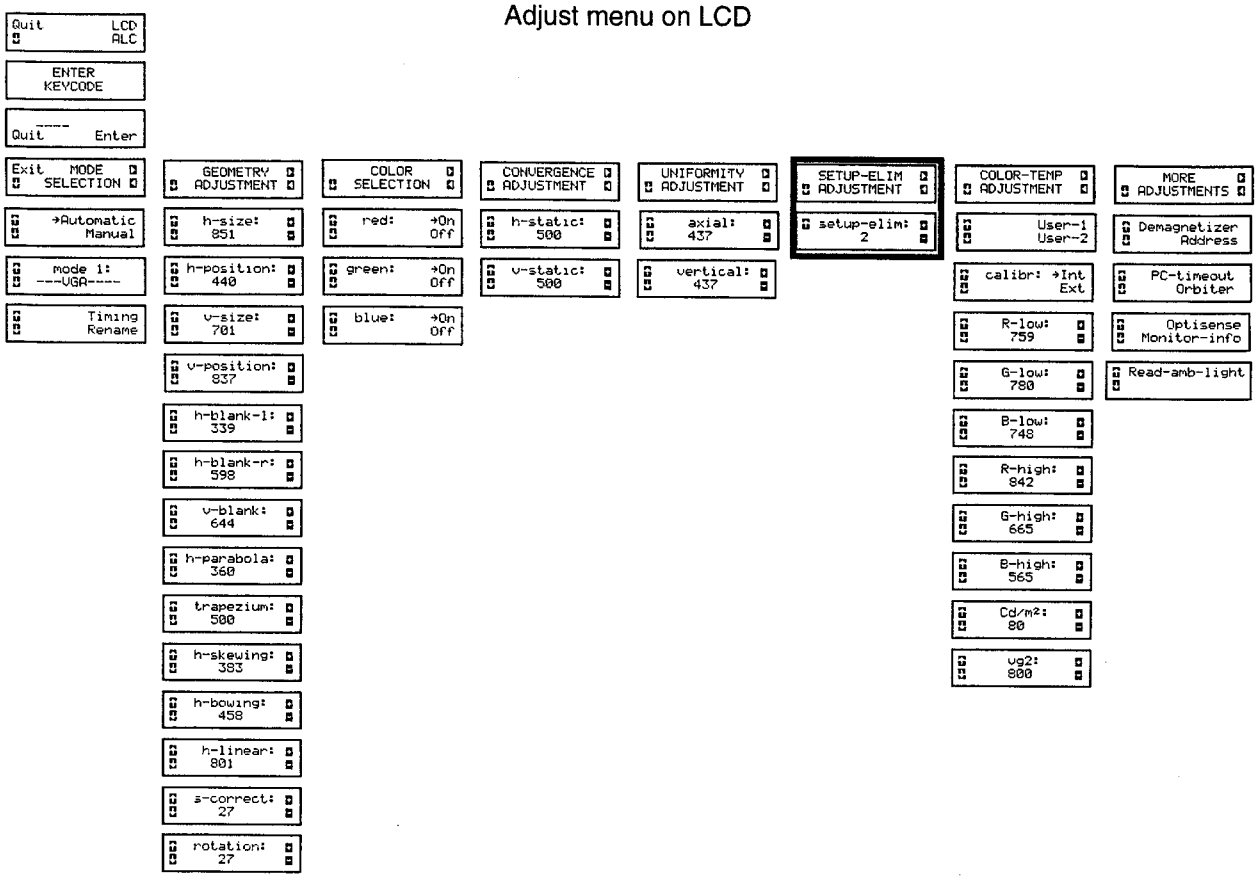


Frequency response: Overshoot at cathode in case of white to black transition.

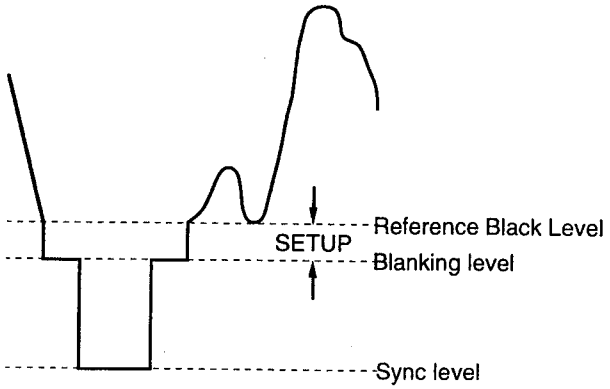
4.10 SETUP ELIMINATION

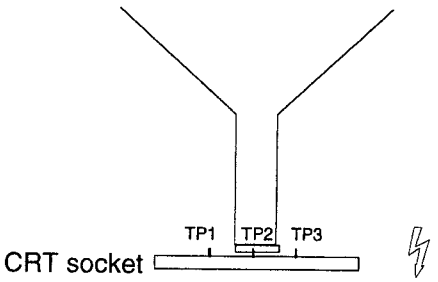
Equipment: Oscilloscope

Adjust menu on LCD



Adjustment	Warnings / Comments
• Put Picture and Background adjustments in calibrated position. • Connect the probe to one of the three cathodes: Tp1 (Red), Tp2 (Green), or Tp3 (Blue) on the CRT socket. Observe the black level of the signal. • Enter the Setup-Elimination menu on the LCD. • Adjust Setup-elim to eliminate the setup in the signal on the oscilloscope.	A lot of graphics boards add some *setup* to the signal. This results in a dc-shift of the signal black level. As a result the background of the picture becomes brighter. This must be eliminated for color accurate applications.



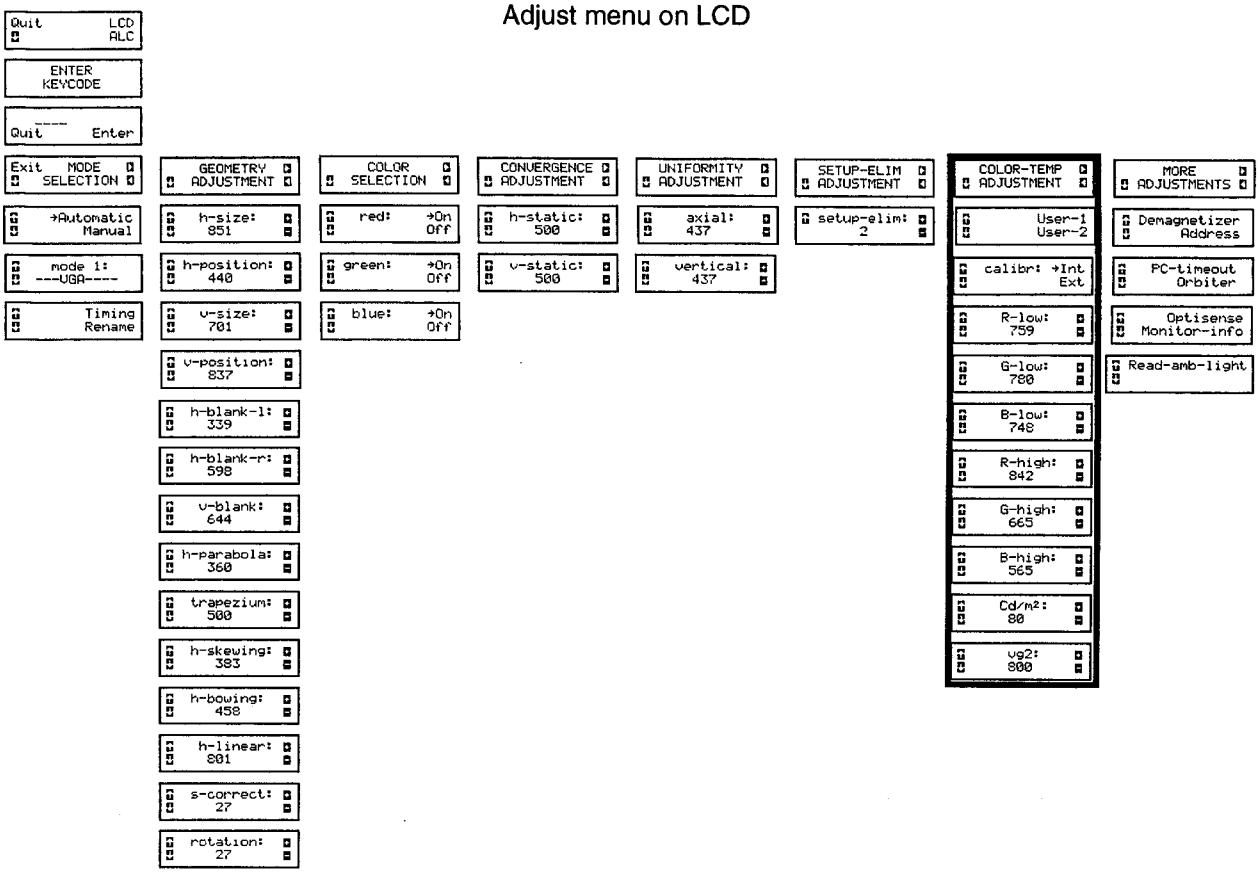


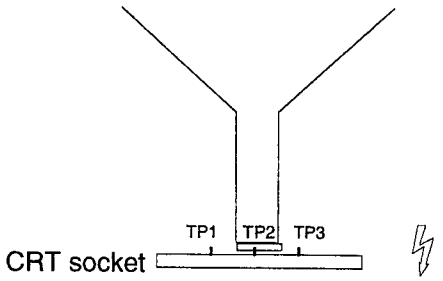
This board contains high voltages

4.11 VG2 ADJUSTMENT

Equipment: Oscilloscope with low capacitance probe (100/1)

Adjust menu on LCD

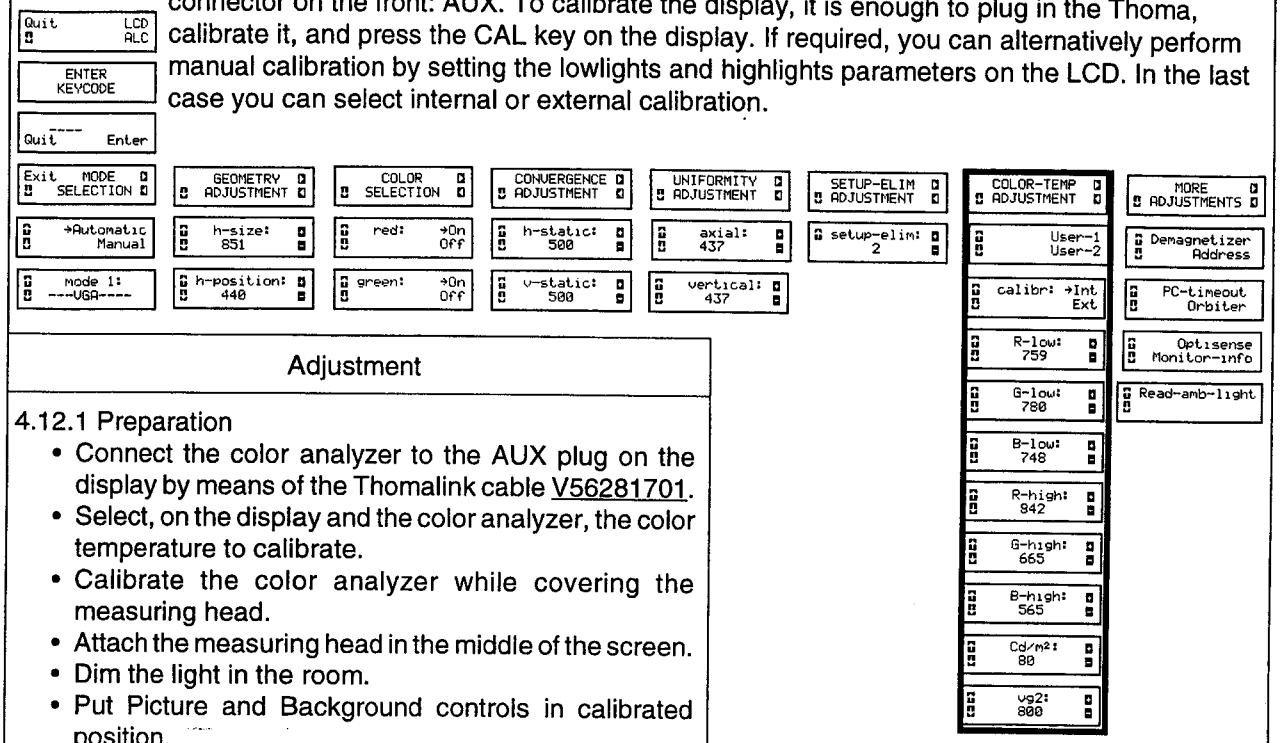


Adjustment	Warnings / Comments
• Put Picture and Background controls in calibrated position. • Enter the Color-Temp Adjustment menu on the LCD and go down to the VG2 adjustment. • Measure the signal black level on the three cathodes: Tp1 (Red), Tp2 (Green), Tp3 (Blue) on the CRT socket. Look for the cathode with the highest black level. • Connect the probe to the cathode with the highest signal black level. • Adjust VG2 to obtain **95 V dc** black level on a 120T model and **110V dc** on a 121 model. • Check the other cathodes: Their black level should not be lower than 20% of the above mentioned voltage. If they are, there is a fault.	 This board contains high voltages

4.12 COLOR CALIBRATION

Equipment: Thoma color analyzer, Signal source in case of external calibration

You can calibrate the display with a Thoma color analyzer, for which the display especially provides a connector on the front: AUX. To calibrate the display, it is enough to plug in the Thoma, calibrate it, and press the CAL key on the display. If required, you can alternatively perform manual calibration by setting the lowlights and highlights parameters on the LCD. In the last case you can select internal or external calibration.



Adjustment

4.12.1 Preparation

- Connect the color analyzer to the AUX plug on the display by means of the Thomalink cable V56281701.
- Select, on the display and the color analyzer, the color temperature to calibrate.
- Calibrate the color analyzer while covering the measuring head.
- Attach the measuring head in the middle of the screen.
- Dim the light in the room.
- Put Picture and Background controls in calibrated position.
- Degauss the display.
- Enter the `Color-Temp Adjustment` menu on the LCD.
- Check the `Cd/m²` value: It should be set to `80`.

4.12.2 Automatic calibration

- Press the CAL key on the keyboard. The calibration with Thoma runs completely automatically.

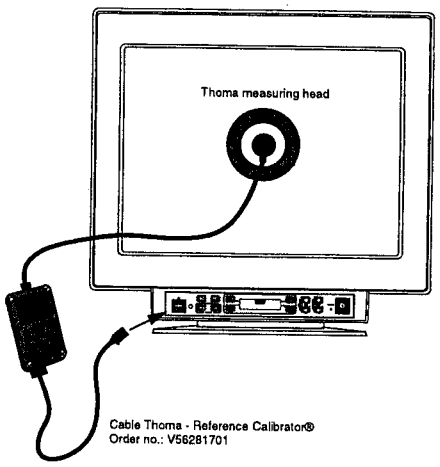
4.12.3 Manual Internal calibration

- Select `calibr: Int` on the LCD.
- Adjust R-low, G-low, and B-low to obtain **0.53 nit** (Cd/m²) read-out on the color analyzer.
- Adjust R-high, G-high, and B-high to obtain **80 nit** (Cd/m²) read-out on the color analyzer.
- Repeat the previous two steps until you reach the desired values.

4.12.4 Manual External calibration

- Select `calibr: Ext` on the LCD.
- Apply a 10% white video signal (70 mVpp video amplitude), white box in the middle of the screen.
- Adjust R-low, G-low, and B-low to obtain **0.53 nit** (Cd/m²) read-out on the color analyzer.
- Apply a 100% white video signal (700 mVpp video amplitude), white box in the middle of the screen.
- Adjust R-high, G-high, and B-high to obtain **80 nit** (Cd/m²) read-out on the color analyzer.
- Repeat the previous two steps until you reach the desired values.

Warnings / Comments



Internal calibration uses the internal signal generator in the display.

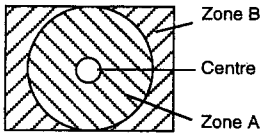
External calibration requires an external signal source, white field switchable between 10% and 100% video signal.

SECTION II: TECHNICAL REFERENCE GUIDE

CHAPTER 1: PROVISIONAL TECHNICAL SPECIFICATIONS

1.1 VISUAL PERFORMANCE:

	CCID121	CCID120T (see manual V598706)
Picture tube:		
Dimension	21"	
Faceplate transmission	47%	
Faceplate Type	AR panel	
Type	Invar shadow mask	
Dot pitch/stripe pitch:	0.28mm	
Antistatic layer:	Yes	
Licht output:		
- Calibrated	80 Cd/m²	
- Maximum long term	120 Cd/m²	
Resolution:		
Adressable pixels	1600	
Adressable lines	1200	
Spotsize controls	DAF-system	
EHT performance:		
EHT voltage	27 kV	
Dynamic size regulation (0 - 100% APL)	0.5%	
Convergence specifications:		
Centre:	0.3 mm	
Zone A:	0.3 mm	
Zone B:	0.5 mm	



1.2 VIDEO PERFORMANCE RGB DRIVE:

RGB bandwidth: typical 150 MHz
Pulse rise and fall time: typical 3 ns
Black level stability (0-100% APL): 0.5%

1.3 COLORIMETRIC PERFORMANCE: CRT

Colortemperatures 5 per scan
Lowest Color temp. limit: 5 000 K
Highest Color temp. limit: 20 000 K

Typical phosphor coordinates:

	121: EBU alike	
	x	y
Red	0.637	0.340
Green	0.278	0.600
Blue	0.147	0.062

1.4 COLORIMETRIC SIGNAL PROCESSING:

A full specification on Colorimetric behavior is available on request.

1.5 SCANNING SYSTEMS:

Horizontal scanning:

Multi sync: µ-processor controlled
Minimum frequency: 30 kHz
Maximum frequency: 80 kHz
Minimum blanking (@ 80kHz): 2.8 µs
Maximum blanking (@ 30kHz): 8 µs
Minimum backporch (SOGreen): 1.3 µs
Storable scan frequencies: 16
Prealigned scans: 5

Vertical scanning:

Automatic selection
Minimum frequency: 48 Hz
Maximum frequency: 120 Hz
Minimum blanking: 400 µs (after leading edge)

1.6 GEOMETRY:

Maximum error (EIA Ballchart): 1 %
Nominal size (4/3 ratio): 121: 373 x 280 mm
Geometry adjustments: LCD/menu's with password via serial port

1.7 CONTROL:

- Dual button control for calibration, increase and decrease Background and Picture.
- Push button for Degauss, Color Temperature Selection, Color Temperature Calibration, Reference and Power.

- Automatic functions:

Automatic horizontal & vertical scan selection
Automatic mains voltage selection
Quick degauss with automatic interval timer
Magnetic correction axial and vertical (ULC)

1.8 INPUTS:

Video:
- Nominal level: 0.7 Vpp
- Maximum / minimum: ±3 dB
- Dual video input, selection via software controls
  - BNC looped trough inputs or D15 input (VGA pattern)
  - Input switching via software
- Maximum setup level: 140 mVpp

Sync:
- Nominal level: 2 Vpp
- Maximum / minimum input: 1 to 4 Vpp
- Composite or Hor. & Vert. sync
- Looped trough via BNC connector
- Automatic polarity selection

Communication inputs/outputs:
- RS232/485 9-pin sub D connector
- Baudrate: 9600

Note: A separate VGA input with the standard 15 pin VGA connector is selectable with the front panel buttons. The RS232/485 communication line for remote functions can be daisy chained for several Calibrator diplays, allowing individual addressing for calibration and control purposes.

1.9 POWER SUPPLY:

Automatic selection: 90 - 135 / 195 - 265 Veff (AC)
Power consumption: 145 W (115V) / 140 W (230V) nominal
Frequency limits: 45 - 65 Hz

1.10 ENVIRONMENTAL:

Temperature range: STD
- cabinet version:
- storage: -20 +65 °C
- operation: 0 +35 °C
- within specs: +10 +30 °C

Altitude:
- storage: 25 000 ft
- operational: 10 000 ft

Humidity (relative):
- non condensing: 90% maximum

1.11 MAGNETIC IMMUNITY SPECIFICATIONS:

Automatic Quick Degauss system
Minimum interval: 10 sec

1.12 MTBF:

- Target: 30 000 hours

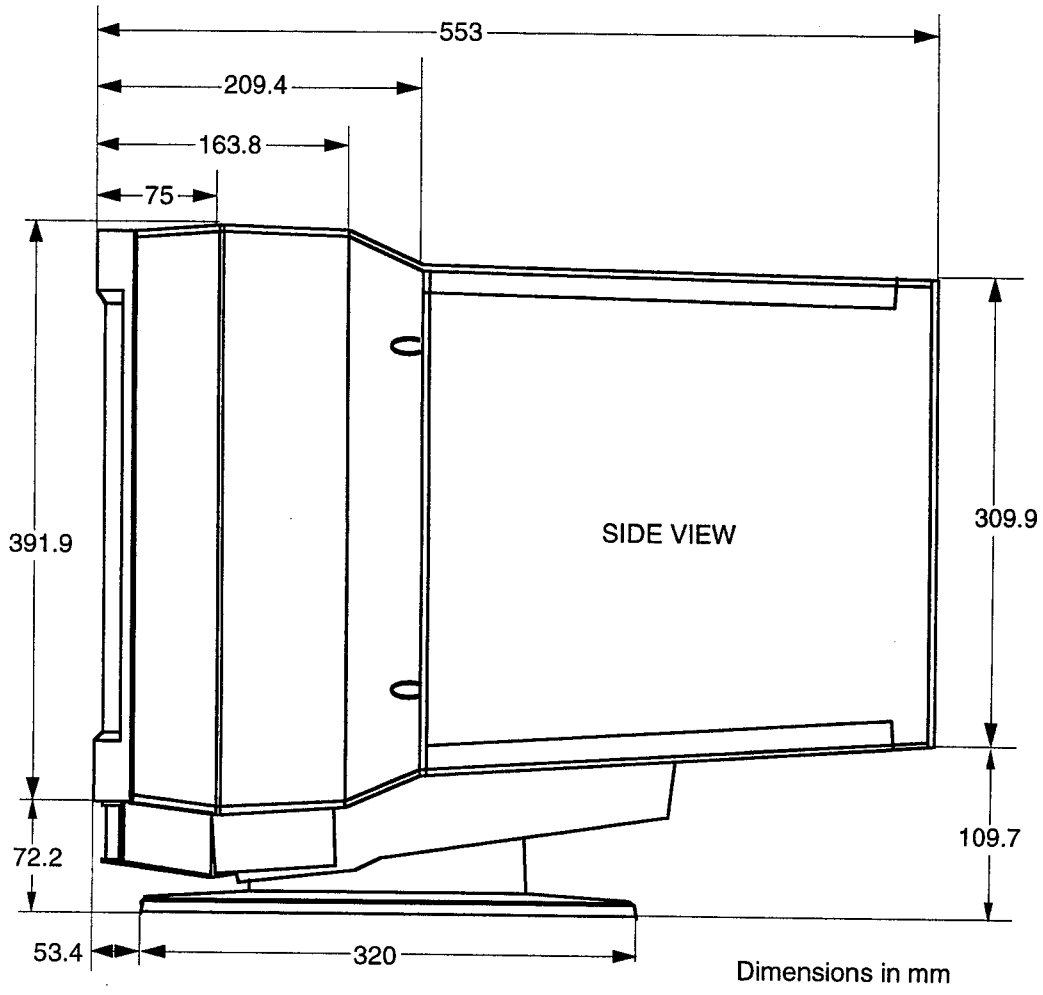
1.13 WEIGHT:

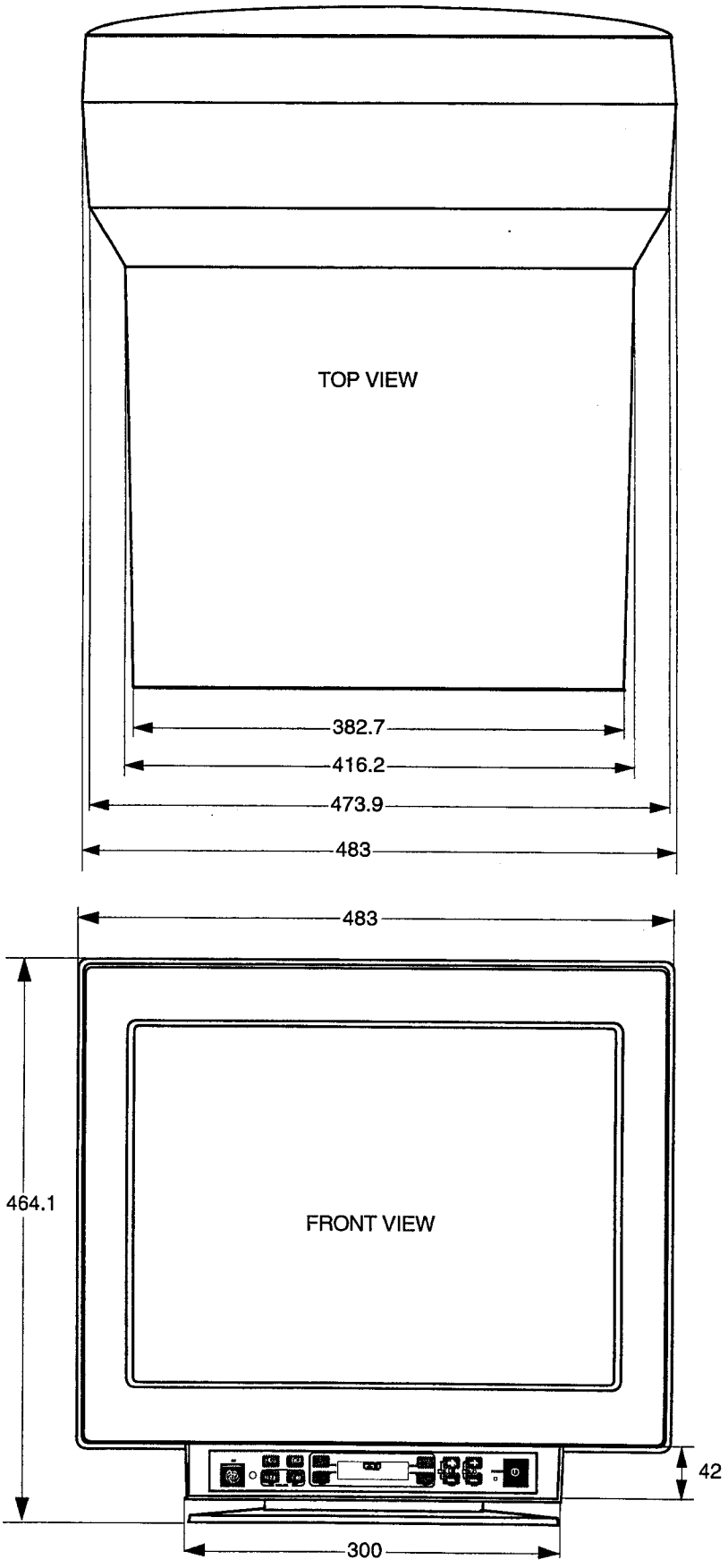
Unpacked: app. 37.6 kg.
Packed: app. 43.3 kg.

1.14 DIMENSIONS PACKING:

H x W x D: 590 x 635 x 745 mm

1.15 MECHANICAL DIMENSIONS:





Technical specifications are subject to change due to technological progress.

CHAPTER 2: DIAGRAMS - PARTS LISTS

2.1. UNIT NAMES - UNIT NUMBERS - PCB NUMBERS

Board name	Unit number MKII	PCB number MKII	Unit number Version 4	PCB number Version 4
	See manual V598706		In this manual	
Switched Mode Power Supply board	V5634401	V752616	V5634401	V752616
Processor board	V5634442	V681092	V5634442	V681092
Control unit	V5634451	V752382	V5634451	V752673
RGB board	V5634421	V681041-6	V5634421	V681091-02
CRT socket (Trinitron)	V5634464	V752627	Triritron version not available	
CRT socket (Shadow mask)	V5634465	V752628	V5634465	V752628
Deflection board (Trinitron)	V5634417	V752625	Trinitron version not available	
Deflection board (Shodow mask)	V5634418	V752626	V5634419	V752651
EHT board	V5634492	V752629	V5634492	V752629
Backboard	V5634470	V752344	V5634471	V752635
CRT (Trinitron)	V131191		Trinitron version not available	
CRT (Shadow mask)	V131192		V1311921	

2.2. HOW TO USE PARTS LISTS

General

Each parts list starts with the board or unit name. The next line gives the company order number of the complete board or unit. The next line gives the columm headings : Order number Description Item.

The "Order number" is the Barco order number. Safety components are marked with ⚠, critical components conserning radiation with a * sign.

The "Description" is a coded description of the component and is explained in the following paragraph.

The "Item" columm gives the component location in the diagram and PCB circuit.

Key code to components

RESISTORS

R	RESISTOR
P	potmeter
M	multiturn
T	trimmer

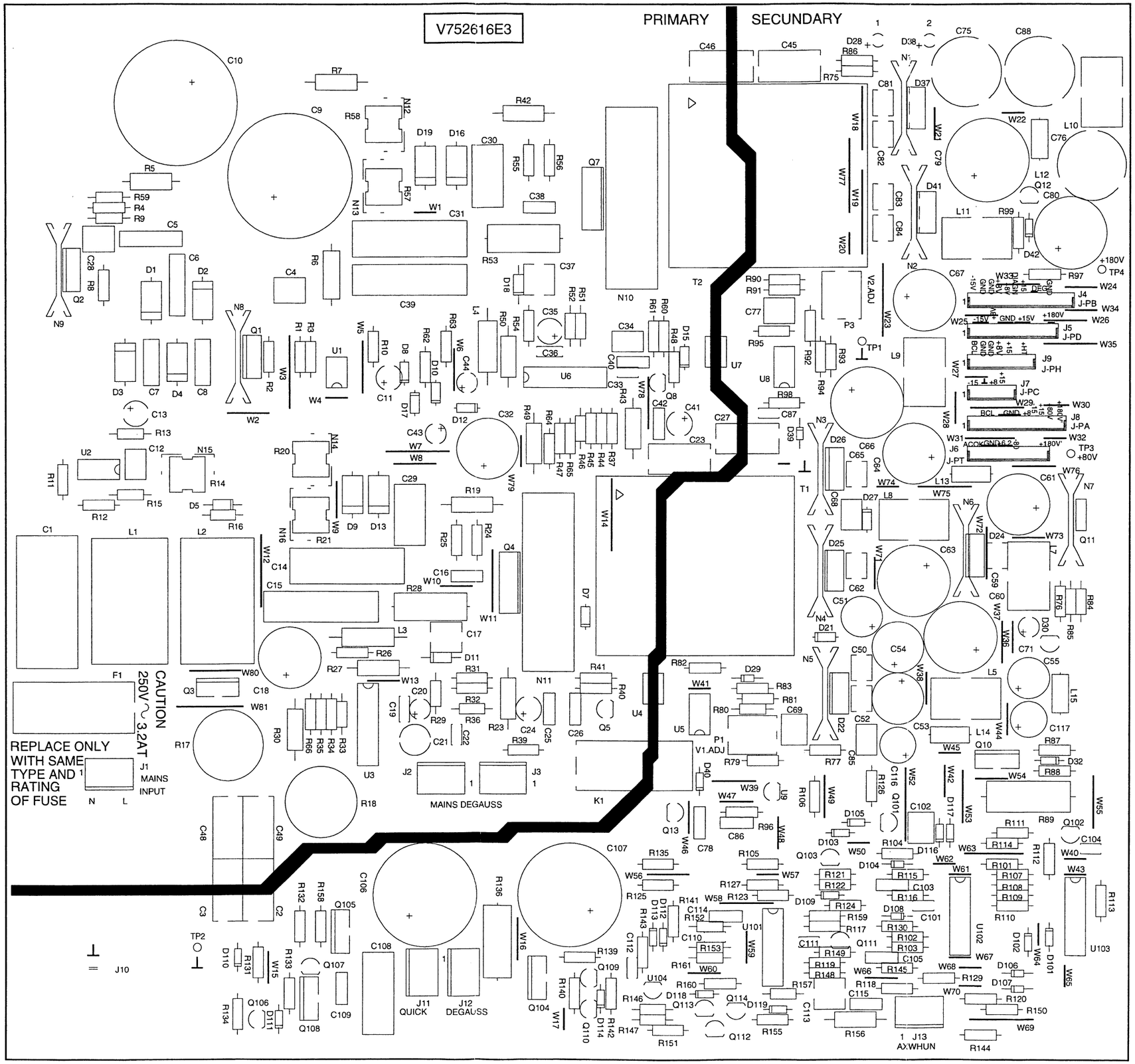
C	A											material	carbon
C	C												carbon composite
C	E												ceramic (cermet)
C	F												carbon film
C	P												conductif plastic
M	F												metal film
M	O												metal oxide
W	W												wire wound
H	V												type high voltage
		F											fuse
		N											non inductif
L	D	R											light dependent
N	T	C											neg. temp. coeff.
P	T	C											pos. temp. coeff.
V	D	R											voltage dependent
			H									mounting	horizontal
			R										radial
			V										vertical
A												array	
	B												bussed
	I												isolated
	D												dual terminator
				x	x	X		x	x			std series of values in a decade	
							E					unit	Ohm
							K						kilo Ohm
							M						mega Ohm
							F					tolerance	1%
							G						2%
							J						5%
							K						10%
							M						20%
								A				res.law	linear
								B					logarithmic
								C					inverse logarithmic
								H					logarithmic with tap
								F					balance

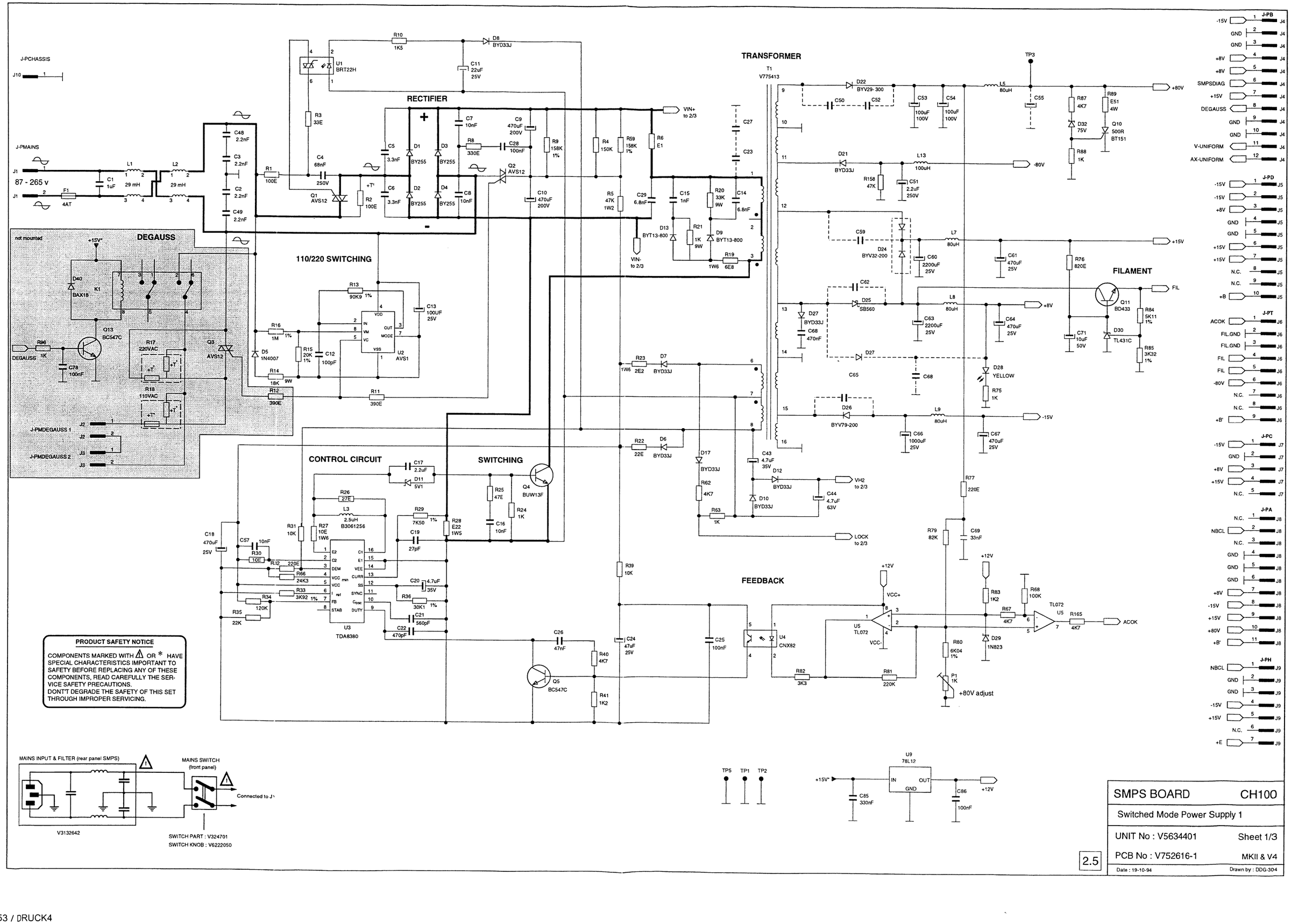
CAPACITOR

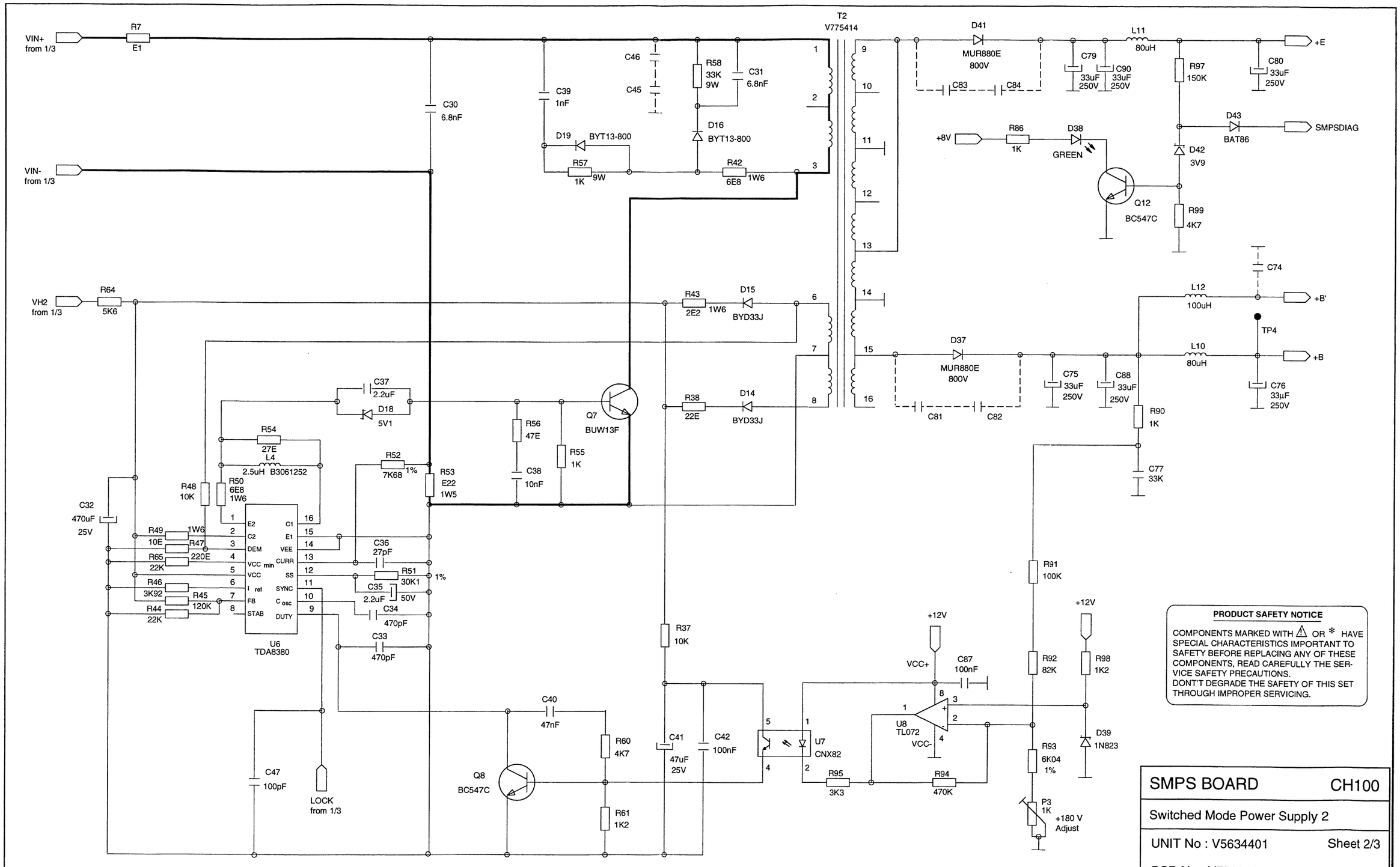
C												CAPACITOR
	XX											
		T										TRIMMER
		E	L									ELECTROLYTIC
		T	A									TANTALIUM
				5								height 5mm
				7								height 7mm
					B							bipolair
					A	X						axial
					R	A						radial
					S	N						snap in
		C	E									CERAMIC
			P	1	0	0		class 1,temp coeff				P100
			N	P	0							NPO
			N	0	7	5						N075
			N	1	5	0						N150
			N	2	2	0						N220

	N	3	3	0		N330
	N	4	7	0		N470
	N	7	5	0		N750
	N	1	5	2		N1500
C	O	G				COG
		*	*			
				class 2, no ceramic specificat.		
R	2	0	2		ceramic art	R2000
R	4	0	2			R4000
R	4	7	2			R4700
R	1	0	4			R10000
X	7	R				X7R
Y	5	V				Y5V
Z	M					ZM
Z	5	P				Z5P
Z	5	U				Z5U
			D	I	layout	disc
			M	I		miniature
			M	U		multilayer
			P	E		pearl
			T	U		tubulair
			T	R		trapezium
			F	T		feed through
P	A				material	paper
P	O					polyester
P	C					polycarbonate
P	P					polypropylene
P	S					polystyrene
S	R					styroflex
P	E					polyethylene
		M	E		intermediate	metal film
		T	P			tin plated
			AX		layout	axial
				RA		radial
				A		array
				B		bussed
				I		isolated
				D		dual terminator
					xxxx,x	value
				std series of values in a decade		
				P		unit P : pf
				N		N : nF
				M		M : µF
				F		F : farad
					voltage range	
				63		63 volt
				100		100 volt
				250		250 volt
				102		1000 volt

2.3. PCB-LAYOUT, DIAGRAMS, OSCILLOGRAMS AND PARTS LISTS


V752616E3
PRIMARY
SECUNDARY
REPLACE ONLY WITH SAME TYPE AND RATING OF FUSE
F1
250V 3.2AT
CAUTION
J1
MAINS INPUT
N L
J10
MAINS DEGAUSS
J11 QUICK
J12 DEGAUSS
J13 AX:WHUN
TP1
TP2
TP3 +80V
TP4 +180V
V2.ADJ
V1.ADJ
J4 J-PB
J5 J-PD
J9 J-PH
J7 J-PC
J8 J-PA
J6 J-PT


J-PCHASSIS
J10
J-PMAINS
J1
87 - 265 v
F1 4AT
C1 1uF
L1 29 mH
L2 29 mH
C48 2.2nF
C3 2.2nF
C2 2.2nF
C49 2.2nF
R1 100E
C4 68nF 250V
Q1 AVS12
R2 100E
C5 3.3nF
C6 3.3nF
D1 BY255
D2 BY255
D3 BY255
D4 BY255
C7 10nF
C8 10nF
C9 470uF 200V
C10 470uF 200V
R8 330E
C28 100nF
Q2 AVS12
R9 158K 1%
R10 1K5
D8 BYD33J
U1 BRT22H
C11 22uF 25V
R3 33E
RECTIFIER
R4 150K
R59 158K 1%
R5 47K 1W2
R6 E1
VIN+ to 2/3
VIN- to 2/3
C27
C23
C29 6.8nF
C15 1nF
C14 6.8nF
R20 33K 9W
R21 1K 9W
D13 BYT13-800
D9 BYT13-800
R19 6E8 1W6
not mounted
DEGAUSS
+15V*
D40 BAX18
K1
Q13 BC547C
R96 1K
DEGAUSS
C78 100nF
R17 220VAC
R18 110VAC
Q3 AVS12
R12 390E
J-PMDEGAUSS 1
J-PMDEGAUSS 2
J2
J3
110/220 SWITCHING
R13 90K9 1%
C13 100UF 25V
R16 1M 1%
R15 20K 1%
C12 100pF
D5 1N4007
R14 18K 9W
U2 AVS1
VDD
IN
VM
VC
OUT
MODE
VSS
R11 390E
TRANSFORMER
T1
V775413
TP3
D22 BYV29- 300
C50
C52
C53 100uF 100V
C54 100uF 100V
L5 80uH
C55
+80V
R87 4K7
R89 E51 4W
D32 75V
Q10 500R BT151
R88 1K
D21 BYD33J
L13 100uH
-80V
R158 47K
C51 2.2uF 250V
C59
D24 BYV32-200
L7 80uH
+15V
C60 2200uF 25V
C61 470uF 25V
R76 820E
FILAMENT
C62
D25 SB560
L8 80uH
+8V
FIL
Q11 BD433
R84 5K11 1%
C71 10uF 50V
D30 TL431C
R85 3K32 1%
D27 BYD33J
C68 470nF
C63 2200uF 25V
C64 470uF 25V
D27
C65
C68
D28 YELLOW
R75 1K
D26 BYV79-200
L9 80uH
-15V
C66 1000uF 25V
C67 470uF 25V
R23 2E2 1W6
D7 BYD33J
R22 22E
D6 BYD33J
D17 BYD33J
R62 4K7
R63 1K
C43 4.7uF 35V
D12 BYD33J
D10 BYD33J
VH2 to 2/3
C44 4.7uF 63V
LOCK to 2/3
R77 220E
CONTROL CIRCUIT
SWITCHING
C17 2.2uF
D11 5V1
R26 27E
L3 2.5uH B3061256
R31 10K
R27 10E 1W6
C57 10nF
R30 10E
R12 220E
R66 24K3
R33 3K92 1%
R34 120K
R35 22K
C18 470uF 25V
U3 TDA8380
C1
E1
VEE
CURR
SS
SYNC
Cosc
DUTY
E2
C2
DEM
VCC min
VCC
I ref
FB
STAB
R29 7K50 1%
R28 E22 1W5
C19 27pF
C20 4.7uF 35V
R36 30K1 1%
C21 560pF
C22 470pF
Q4 BUW13F
R25 47E
R24 1K
C16 10nF
R39 10K
FEEDBACK
+12V
VCC+
VCC-
U5 TL072
U4 CNX82
C26 47nF
C24 47uF 25V
C25 100nF
R40 4K7
R41 1K2
Q5 BC547C
R82 3K3
R81 220K
R79 82K
C69 33nF
R83 1K2
R68 100K
R67 4K7
R165 4K7
ACOK
R80 6K04 1%
D29 1N823
P1 1K
+80V adjust
PRODUCT SAFETY NOTICE
COMPONENTS MARKED WITH ⚠ OR * HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY BEFORE REPLACING ANY OF THESE COMPONENTS, READ CAREFULLY THE SERVICE SAFETY PRECAUTIONS. DONT'T DEGRADE THE SAFETY OF THIS SET THROUGH IMPROPER SERVICING.
MAINS INPUT & FILTER (rear panel SMPS)
MAINS SWITCH (front panel)
Connected to J
V3132642
SWITCH PART : V324701
SWITCH KNOB : V6222050
TP5 TP1 TP2
U9 78L12
IN
OUT
GND
+15V*
C85 330nF
C86 100nF
+12V
J-PB
-15V
GND
+8V
SMPSDIAG
DEGAUSS
V-UNIFORM
AX-UNIFORM
J-PD
J-PT
ACOK
FIL.GND
FIL
-80V
+B'
J-PC
J-PA
NBCL
+80V
+B
J-PH
+E
SMPS BOARD CH100
Switched Mode Power Supply 1
UNIT No : V5634401
Sheet 1/3
PCB No : V752616-1
MKII & V4
Date : 19-10-94
Drawn by : DDG-304
2.5



PRODUCT SAFETY NOTICE

COMPONENTS MARKED WITH ⚠ OR * HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY BEFORE REPLACING ANY OF THESE COMPONENTS, READ CAREFULLY THE SERVICE SAFETY PRECAUTIONS.
DONT'T DEGRADE THE SAFETY OF THIS SET THROUGH IMPROPER SERVICING.

SMPS BOARD	CH100
Switched Mode Power Supply 2	
UNIT No : V5634401	Sheet 2/3
PCB No : V752616-1	MKII & V4
Date : 19-10-94	Drawn by : DDG-304

+15V R163 10E +15V* C116 100uF 35V
-15V R164 10E -15V* C117 100uF 35V
+80V R125 2K2 C106 1500uF 100V
-80V R135 2K2 C107 1500uF 100V
R158
R131 3K3
Q105 IRF9620
Q106 MPSA42
R134 2K2
D110 5V1
Q104 IRF620
R132 3K3
Q107 MPSA92
R133 2K2
D111 5V1
C108 470nF
Q108 IRF520
C109 47nF
Q109 BC557C
D113 1N4148
R141 100K
R139 100K
D112 22V
R140 4K7
Q110 BC547C
D114 1N4148
R142 47K
C110 100nF
C111 100nF
C112 1nF
U101 LM324A
R143 2K2
R146 30K1 1%
R147 10K 1%
VREF
U104 TL431C
DEGAUSS COILS
J12 J11
R136 E33 1W5
DEG
R105 1M
Q101 BC547C
R126 470K
R127 100K
D103 1N4148
D105 1N4148
R106 47K
C102 1uF
D104 BAT86
R104 1M
R102 47K
R103 270E
C101 100nF
R101 47K
U102 LM339
D116 1N4148
D117 1N4148
C104 100nF
U103 4013B
VDD VSS
R116 4M7
R130 10K
D108 BAT86
C103 100pF
R115 100K
R112 220K
R111 100K
Q102 BC547C
R114 47K
R113 47K
R108 47K
R109 47K
D101 1N4148
D102 1N4148
R144 470K
R120 10K
D107 BAT86
R107 47K
R110 47K
R118 10K
R117 10K 1%
R159 1K2
R124 10K
D106 BAT86
Q111 BF245B
U101 TL074
R148 10K
R119 47K
C113 2.2uF
D120 1N4148
R149 1M5
R150 1M
VUNIFORM
R145 100K
C105 1nF
R129 100K
D109 1N4148
R122 47K
R123 470K
R121 47K
Q103 BC547C
-15V*
VREF
R152 10K 1%
R157 10K 1%
R153 10K 1%
R161 10K 1%
Q112 BF245B
AXUNIFORM
R162 1K
R151 100K
C114 10nF
U101 LM324A
R156 100E 1W6
C115 100nF
J13
WHITE UNIFORMITY COIL
R160 470E
R155 47E
Q113 BC337
Q114 BC327
D118 BAV21
D119 BAV21

PRODUCT SAFETY NOTICE

COMPONENTS MARKED WITH ⚠ OR * HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY BEFORE REPLACING ANY OF THESE COMPONENTS, READ CAREFULLY THE SERVICE SAFETY PRECAUTIONS.
DONT'T DEGRADE THE SAFETY OF THIS SET THROUGH IMPROPER SERVICING.

SMPS BOARD	CH100
"QUICK DEGAUSS"	Sheet 3/3
UNIT No : V5634401	
PCB No : V752616-1	MKII &V4
Date : 19-10-94	Drawn by : DDG-304

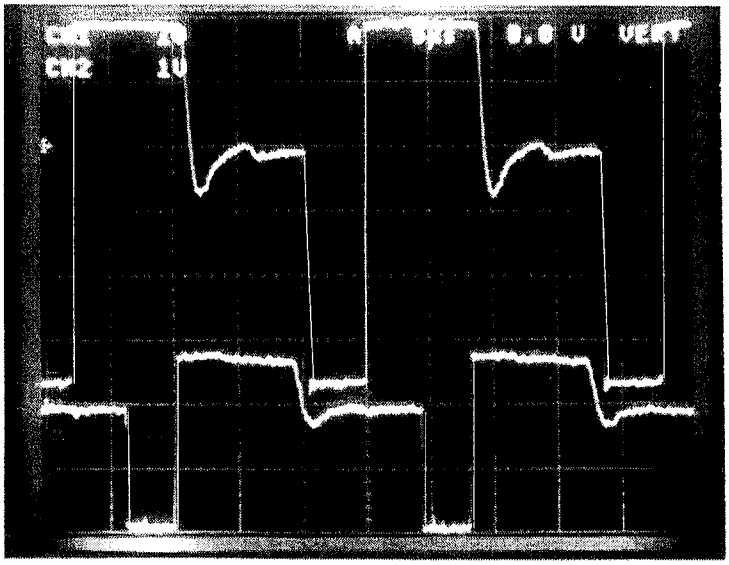


Photo 1

T2 pin 15 : 100V/div.

T1 pin 9 : 100V/div.

Probe 100/1, timebase 5µsec/div.

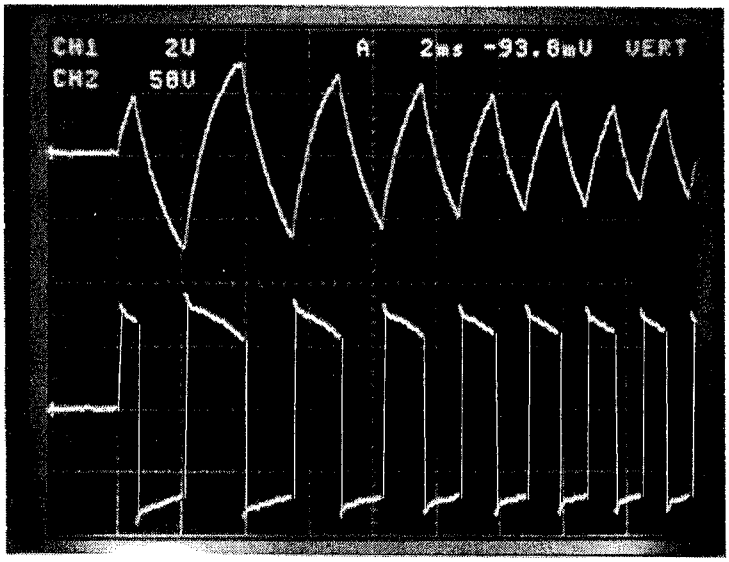


Photo 2

Degauss current (over current sense resistor R136) : 2V/div.

Voltage over degauss coil and current sense resistor (J12/1and J11/2) : 2V/ div.

Probe 100/1, timebase 2 msec/div.

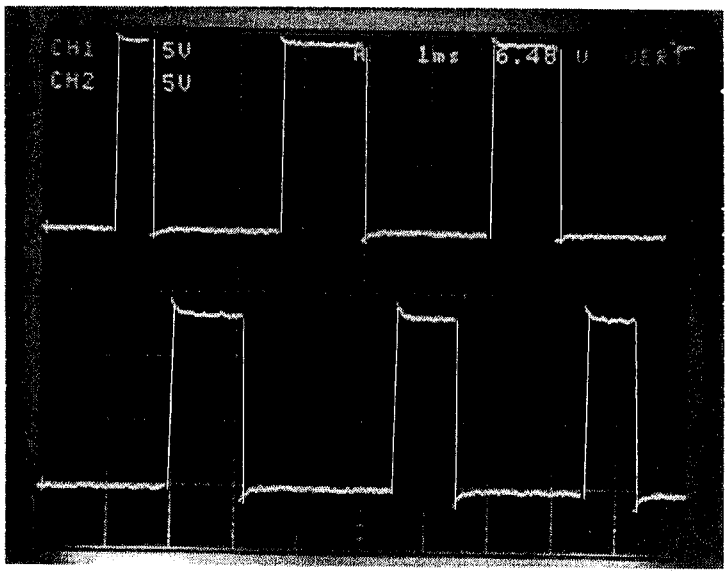


Photo 3

U103 pin 1 : 5V/div.

U103 pin 13 : 5V/div.

Probe 100/1, timebase 1 msec/div.

PARTS LIST OF THE SWITCHED MODE POWER SUPPLY BOARD

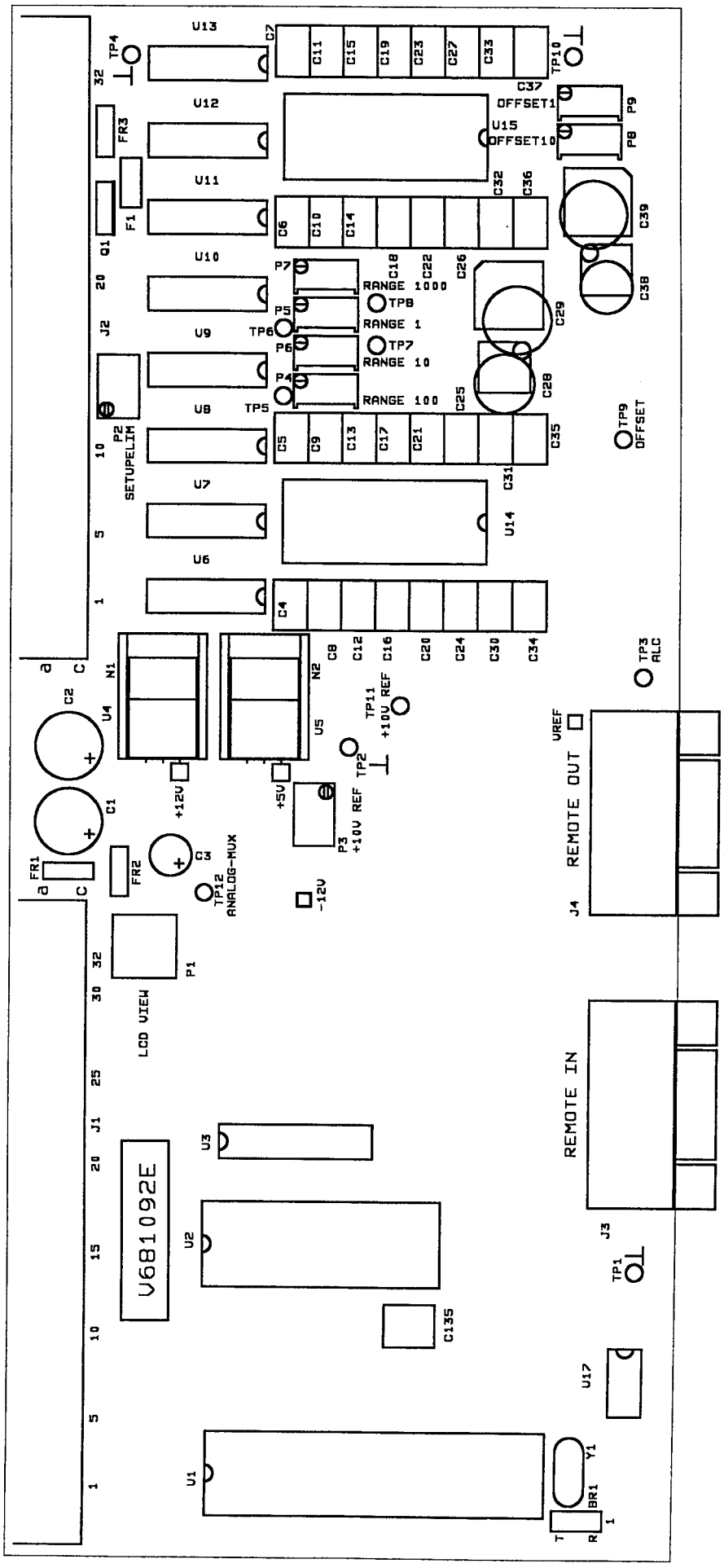
Order number of a complete board: V5634401 (Index: 02)

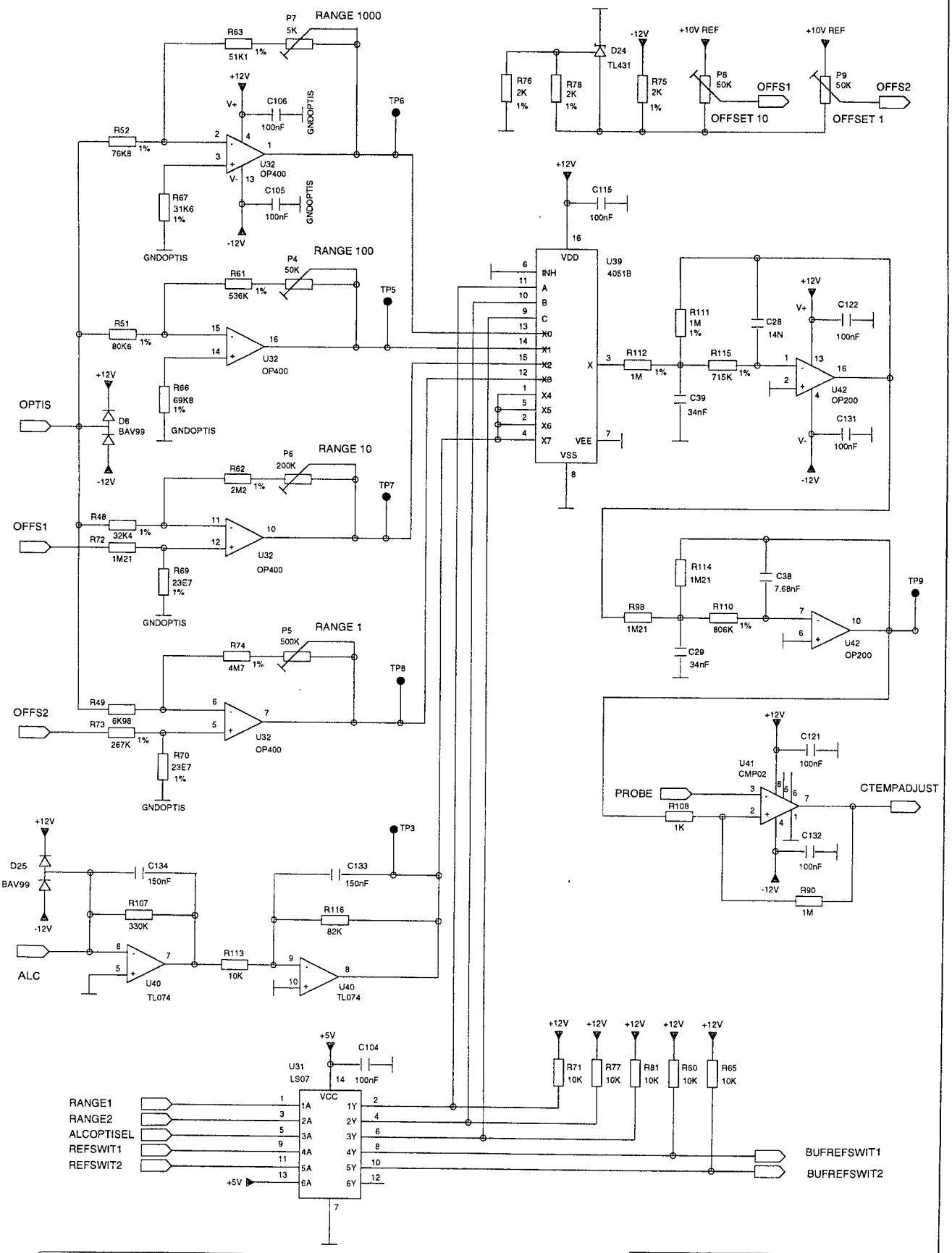
Order number	Description	Item
C1011129	R CFFH 10E J 0W25	00 R163,R164
V101229	R MF H270E J 0W5 E4	00 R103
V101235	R MF H820E J 0W5 E4	00 R76
V101240	R MF H 2K2 J 0W5 E4	00 R125,R133,R134,R135,R143
V101261	R MF H120K J 0W5 E4	00 R34 ,R45
V101274	R MF H 1M5 J 0W5 E4	00 R149
V1018998	R CFFH E1 K 0W7	00 R6 ,R7
V1026005	R MF H100E F 0W6 E4	00 R1
V1026006	R MF H 1K F 0W6 E4	00 R162,R24 ,R55 ,R63 ,R75 ,R86 , R88 ,R90
V1026007	R MF H 10K F 0W6 E4	00 R117,R118,R120,R124,R130,R147, R148,R152,R153,R157,R161,R31 , R37 ,R39 ,R48
V1026008	R MF H100K F 0W6 E4	00 R111,R115,R127,R129,R139,R141, R145,R151,R68 ,R91
V1026009	R MF H 1M F 0W6 E4	00 R104,R105,R150,R16
V1026086	R MF H 1K21F 0W6 E4	00 R159,R41 ,R61 ,R83 ,R98
V1026176	R MF H 1K5 F 0W6 E4	00 R10
V1026178	R MF H150K F 0W6 E4	00 R4 ,R97
V1026198	R MF H158K F 0W6 E4	00 R59 ,R9
V1026297	R MF H 20K F 0W6 E4	00 R15
V1026334	R MF H 22E1 F 0W6 E4	00 R22 ,R38
V1026335	R MF H221E F 0W6 E4	00 R32 ,R47 ,R77
V1026337	R MF H 22K1 F 0W6 E4	00 R35 ,R44 ,R65
V1026338	R MF H221K F 0W6 E4	00 R112,R81
V1026377	R MF H 24K3 F 0W6 E4	00 R66
V1026424	R MF H 27E4 F 0W6 E4	00 R26 ,R54
V1026467	R MF H 30K1 F 0W6 E4	00 R146,R36 ,R51
V1026504	R MF H 33E2 F 0W6 E4	00 R3
V1026505	R MF H332E F 0W6 E4	00 R8
V1026506	R MF H 3K32F 0W6 E4	00 R131,R132,R82 ,R85 ,R95
V1026575	R MF H392E F 0W6 E4	00 R11
V1026576	R MF H 3K92F 0W6 E4	00 R33 ,R46
V1026654	R MF H 47E5 F 0W6 E4	00 R155,R25 ,R56
V1026655	R MF H475E F 0W6 E4	00 R160
V1026656	R MF H 4K75F 0W6 E4	00 R140,R165,R40 ,R60 ,R62 ,R67 , R87 ,R99
V1026657	R MF H 47K5 F 0W6 E4	00 R101,R102,R106,R107,R108,R109, R110,R113,R114,R119,R121,R122, R142,R158
V1026658	R MF H475K F 0W6 E4	00 R123,R126,R144,R94
V1026659	R MF H 4M75F 0W6 E4	00 R116
V1026686	R MF H 5K11F 0W6 E4	00 R84
V1026726	R MF H 5K62F 0W6 E4	00 R64
V1026756	R MF H 6K04F 0W6 E4	00 R93
V1026776	R MF H 6K34F 0W6 E4	00 R80
V1026846	R MF H 7K5 F 0W6 E4	00 R29
V1026856	R MF H 7K68F 0W6 E4	00 R52
V1026887	R MF H 82K5 F 0W6 E4	00 R79 ,R92
V1026927	R MF H 90K9 F 0W6 E4	00 R13
V102904	R MF H 2E2 J 2W E7	00 R23 ,R43
V102910	R MF H 6E8 J 2W E7	00 R19 ,R42

Order number	Description	Item
V102912	R MF H 10E J 2W E7	00 R27 ,R30 ,R49 ,R50
V102924	R MF H100E J 2W E7	00 R156
V102956	R MF H 47K J 2W E7	00 R5
V103201	R MO H E22J 1W5	00 R28 ,R53
V103202	R MO H E33J 1W5	00 R136
V1036091	R WW H E51K 4W	00 R89
V104340	R WW V 1K K 9W	00 R21 ,R57
V104355	R WW V 18K K 9W	00 R14
V104358	R WW V 33K K 9W	00 R20 ,R58
V105200	R PTC 100E	00 R2
V1061041	R TCA H 1K M 0W1 R10NC	00 P1 ,P3
V1113875	C EL RA 33M M250E3 105	00 C75 ,C76 ,C79 ,C80 ,C88 ,C90
V111471	C EL RA1000M M 25E3 105	00 C66
V111475	C EL RA 2M2M400E2 105	00 C51
K1114777	C EL RA 100M M 25E2 105	00 C116,C117,C13
V1114799	C EL RA 470M M 25E2 105	00 C18 ,C32 ,C61 ,C64 ,C67
V1114815	C EL RA2200M M 25E3 105	00 C60 ,C63
V111484	C EL RA 100M M100E2 105	00 C53 ,C54
V1115109	C EL RA 22M M 25E2 105	00 C11
V1115119	C EL RA 47M M 25E2 105	00 C24 ,C41
V1115319	C EL RA 10M M 50E2 105	00 C71
V1115489	C EL RA 2M2M 50E2 105	00 C35
V1115509	C EL RA 4M7M 63E2 105	00 C20 ,C43 ,C44
V111600	C EL RA1500M M100E4 105	00 C106,C107
V1116435	C EL RA 470M M200E4 105	00 C10 ,C9
C111760	C PPMERA 1N J202E9 HV	00 C15 ,C39
V112235	C NP0 MI 27P G100E2	00 C19 ,C36
V112242	C NP0 MI 100P G100E2	00 C103,C47
V112735	C CE MI 470P K100E2	00 C22 ,C33
V112739	C CE MI 1N K100E2	00 C105,C112
V1127830	C X7R MU 100N K 50E2 125	00 C101,C104,C110,C111,C87
V112831	C CE DI 3N3S400E2	00 C5 ,C6
C112837	C CE DI 10N S400E3 85	00 C7 ,C8
V1140366	C POMERA 33N K250E2 85	00 C69 ,C77
V1140406	C POMERA 68N K250E2 85	00 C4
V1140424	C POMERA 100N K400E6 85	00 C28
V1140502	C POMERA 470N K100E6 85	00 C108
V114080	C POMERA 10N K 63E2 85	00 C114,C16 ,C38 ,C57
V114084	C POMERA 47N K 63E2 85	00 C109,C26 ,C40
V114088	C POMERA 100N K 63E2 85	00 C115,C25 ,C42 ,C86
V114091	C POMERA 330N K 63E2 85	00 C85
V114096	C POMERA 1M K 63E2 85	00 C102
V114098	C POMERA 2M2M 50E2 85	00 C113,C17 ,C37
V114476	C PO RA 6N8K630E4 85	00 C29 ,C30
C1147009	C CE DI 4N7M400E5 Y	00 C2 ,C3 ,C48 ,C49
C1147169	C PO RA 1M K250E11 X2	00 C1
V115011	C PPMERA 6N8J162E9 HV	00 C14 ,C31
V1151502	C PP RA 100P H100E2 85	00 C12
V1151572	C PP RA 470P H100E2 85	00 C34
V1163054	C PP RA 560P F630E2 85	00 C21
V1314073	Q BC547C N SS TO92	00 Q101,Q102,Q103,Q110,Q12 ,Q5 , Q8
V1314133	Q BC557C P SS TO92	00 Q109
V131426	Q BC337 N SS TO92	00 Q113
V131433	Q BD433 N P TO126	00 Q11

Order number	Description	Item
V3137815	J CT H MBT P 5 M2SN WH 00	J7
V3137817	J CT H MBT P 7 M2SN WH 00	J9
V3137819	J CT H MBT P 9 M2SN WH 00	J6
V3137820	J CT H MBT P10 M2SN WH 00	J5
V3137821	J CT H MBT P11 M2SN WH 00	J8
V3137822	J CT H MBT P12 M2SN WH 00	J4
K3141041	F T 4A H 5X20 RU/VDE 00	0101
C314509	F A CAP 5X20 BLK 00	0100
V314513	F A HLD S UNIV PC/CPL 00	F1
V3153111	J RVT MBT D 2 L12 00	0002
K3153151	J RVT MBT D 2.3L12.7 00	0200
V346991	SLV SHR D19 /9.5 BK 00	0026
V348064	CBLA CLP D15 TWIST 00	0014
C348200	SLVU OIL D 1.5 L10 RED 00	0003
C3482005	SLVU OIL D 1.5 L 5 RED 00	0031
C3619125	SCR D965 M 3 X 6 STZB 00	0022
V362120	SCR D7985 M 3 X 4 STZN 00	0017
V362199	SCR Z7985 M 3 X 8 STZN 00	0010
V366102	NUT D934 M 3 STZN 00	0011
V366940	I NUT ST M3 PCB STSN 00	0030
V367455	RVT BLND_R3.2C 4.8 STAL 00	0016
V6002181	SHLD CH MNS BLK 00	0023
V601412	PRINT HANGER CH100 02	0020
V601419	STIFFENER PCB CH100 03	0021
V601421	INPUTPANEL PS CH100 02	0015
V601462	SHIELDING MAINS FILTER 00	0025
V602950	J TESTPIN BT D 00	TP1 ,TP2 ,TP3 ,TP4 ,TP5
V752616	PCB SMPS CCID 12X V3 01	PCB1
V775413	T CCID12X SMP 1 03	T1
V775414	T CCID12X SMP 2 03	T2

PROCESSOR BOARD





PRODUCT SAFETY NOTICE

COMPONENTS MARKED WITH ⚠ OR * HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY BEFORE REPLACING ANY OF THESE COMPONENTS, READ CAREFULLY THE SERVICE SAFETY PRECAUTIONS.
DONT'T DEGRADE THE SAFETY OF THIS SET THROUGH IMPROPER SERVICING.

PROCESSOR BOARD CH100

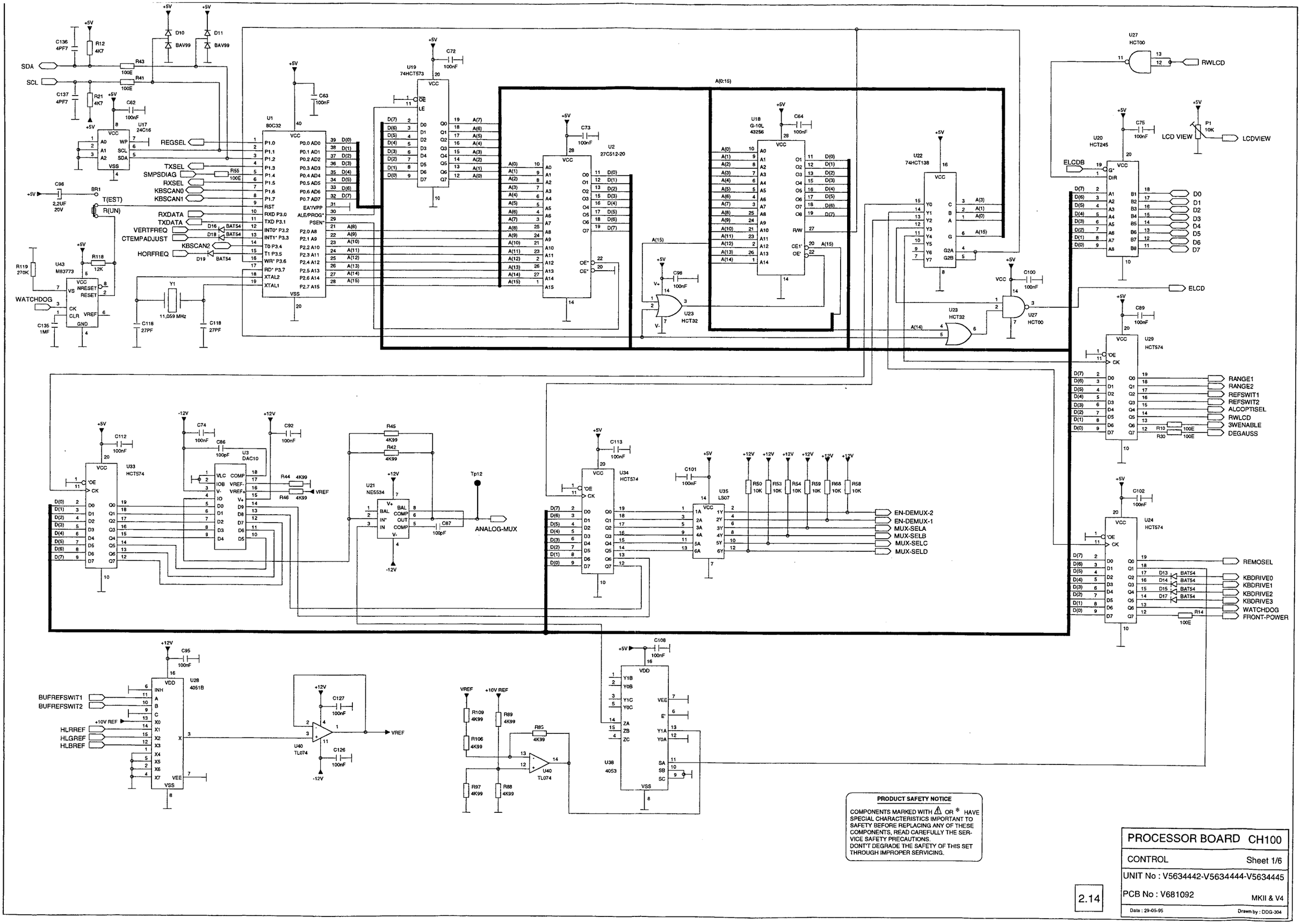
OPTISENSE — Sheet 5/6

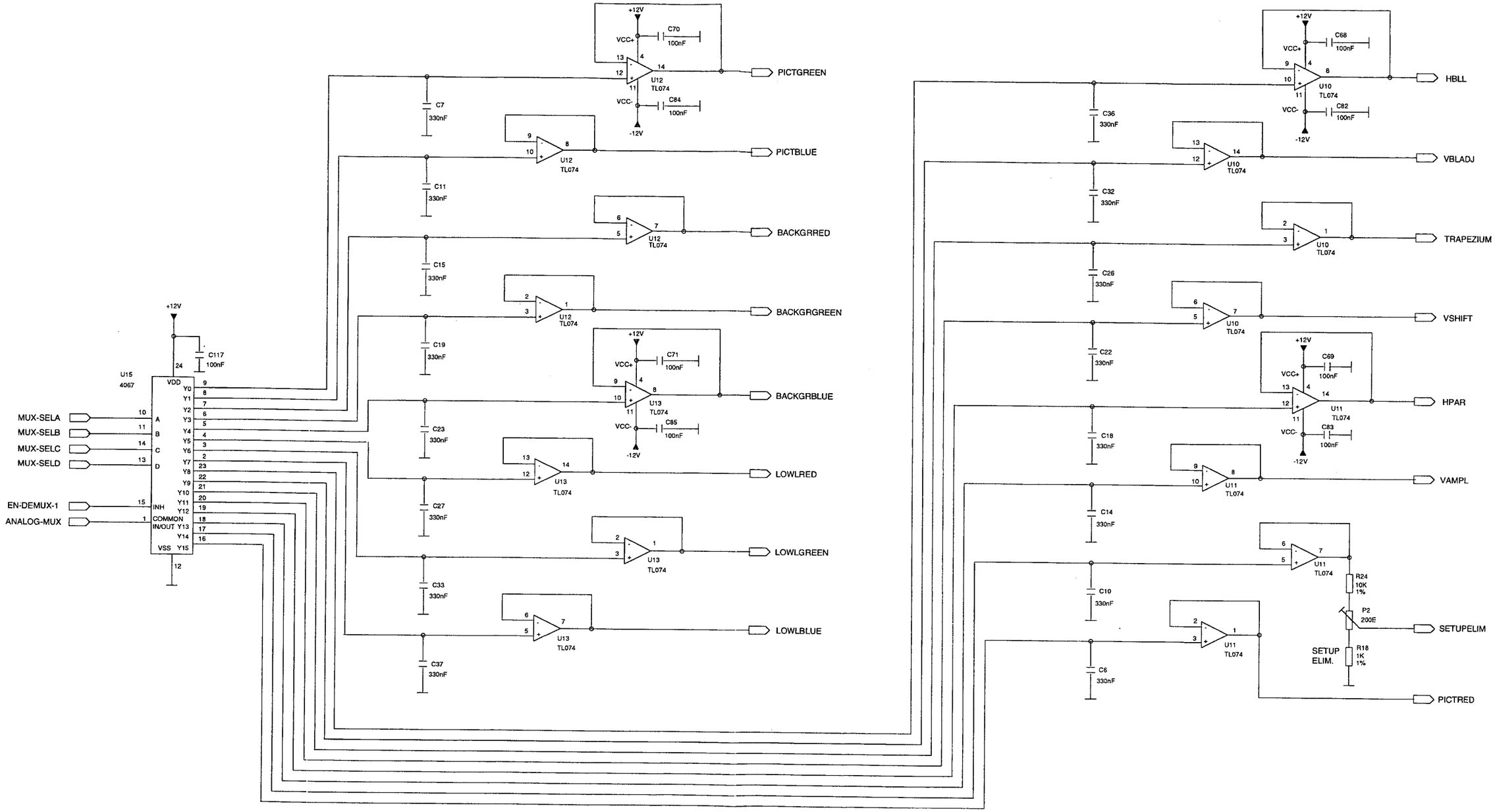
UNIT No : V5634442-V5634444-V5634445

PCB No : V681092 — MKII & V4

2.18

Date : 29 - 05 - 95 — Drawn by : DDG-304


SDA
SCL
REGSEL
TXSEL
SMPSDIAG
RXSEL
KBSCAN0
KBSCAN1
T(EST)
R(UN)
RXDATA
TXDATA
VERTFREQ
CTEMPADJUST
KBSCAN2
HORFREQ
WATCHDOG
A(0:15)
RWLCD
LCD VIEW
LCDVIEW
ELCDB
ELCD
RANGE1
RANGE2
REFSWIT1
REFSWIT2
ALCOPTISEL
RWLCD
3WENABLE
DEGAUSS
REMOSEL
KBDRIVE0
KBDRIVE1
KBDRIVE2
KBDRIVE3
WATCHDOG
FRONT-POWER
EN-DEMUX-2
EN-DEMUX-1
MUX-SELA
MUX-SELB
MUX-SELC
MUX-SELD
ANALOG-MUX
BUFREFSWIT1
BUFREFSWIT2
HLRREF
HLGREF
HLBREF
VREF
+10V REF
PRODUCT SAFETY NOTICE
COMPONENTS MARKED WITH ⚠ OR * HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY BEFORE REPLACING ANY OF THESE COMPONENTS, READ CAREFULLY THE SERVICE SAFETY PRECAUTIONS.
DONT'T DEGRADE THE SAFETY OF THIS SET THROUGH IMPROPER SERVICING.
PROCESSOR BOARD CH100
CONTROL Sheet 1/6
UNIT No : V5634442-V5634444-V5634445
PCB No : V681092 MKII & V4
Date : 29-05-95
Drawn by : DDG-304
2.14



PRODUCT SAFETY NOTICE

COMPONENTS MARKED WITH ⚠ OR * HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY BEFORE REPLACING ANY OF THESE COMPONENTS, READ CAREFULLY THE SERVICE SAFETY PRECAUTIONS.
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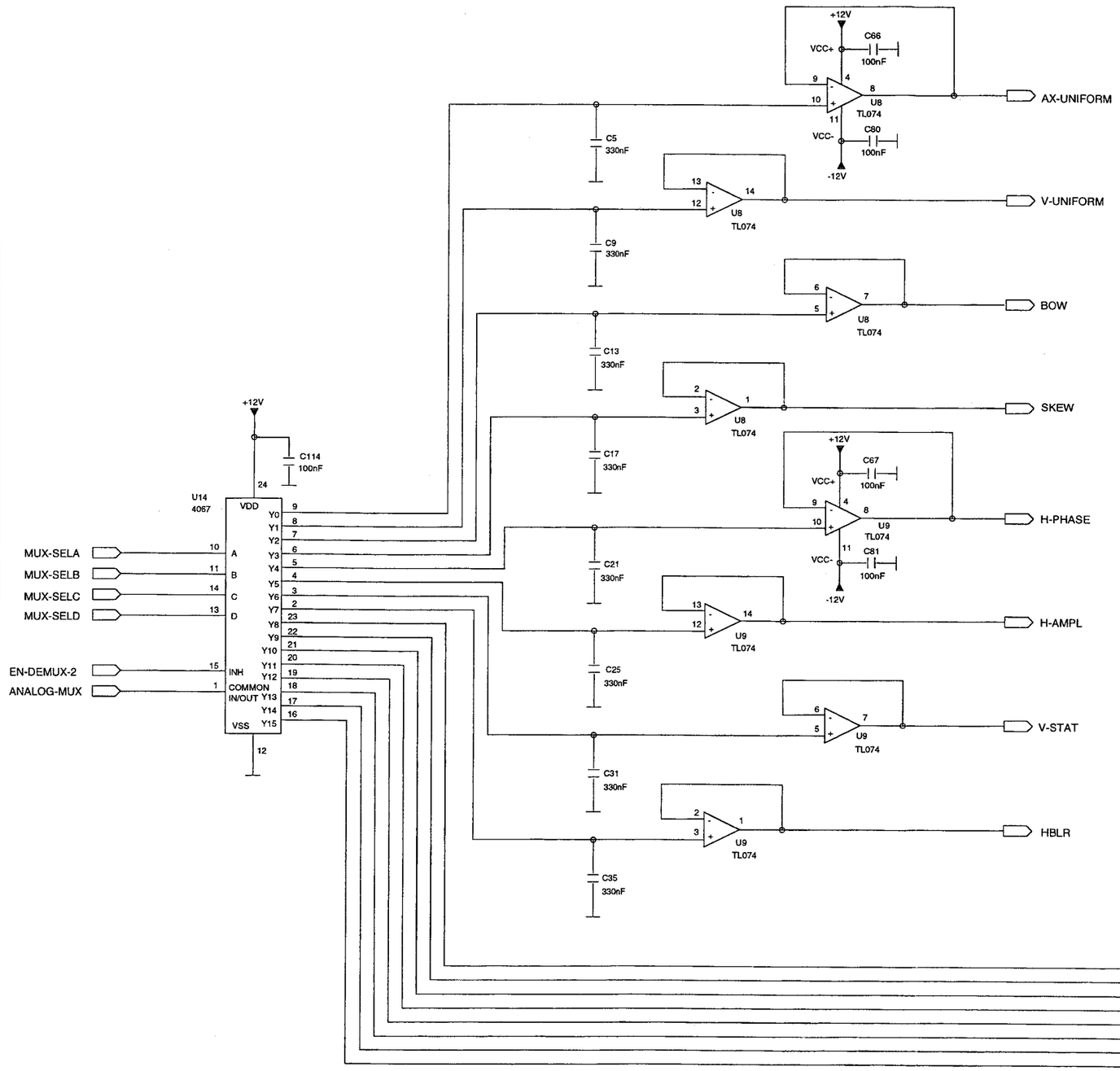
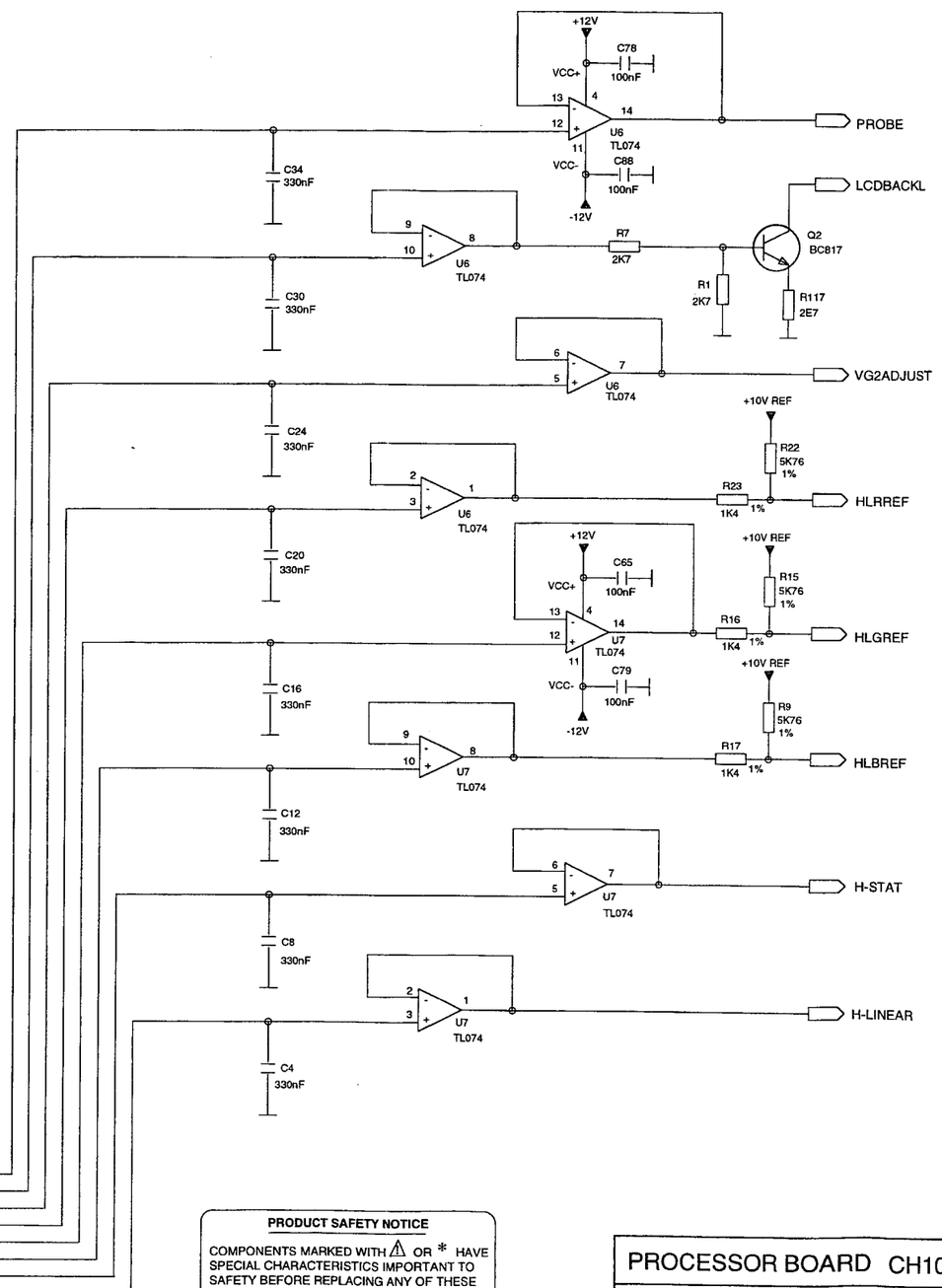
2.15

PROCESSOR BOARD CH100	
MUXER 1	Sheet 2/6
UNIT No : V5634442-V5634444-V5634445	
PCB No : V681092	MKII & V4
Date : 29 -05 - 95	Drawn by : DDG-304





PRODUCT SAFETY NOTICE

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PROCESSOR BOARD CH100

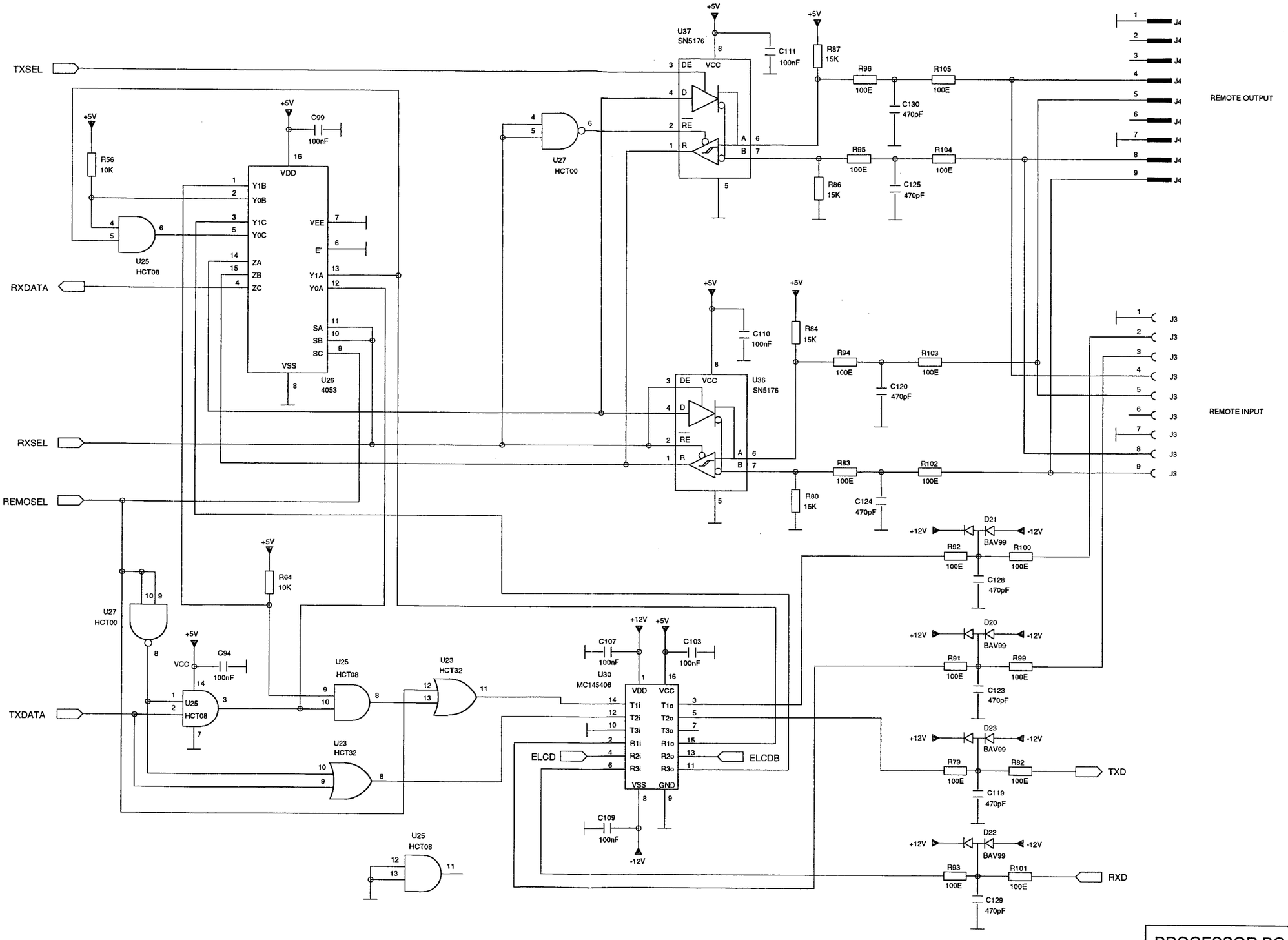
MUXER 2 — Sheet 3/6

UNIT No : V5634442-V5634444-V5634445

PCB No : V681092 — MKII & V4

Date : 29 - 05 - 95 — Drawn by : DDG-304

2.16



PRODUCT SAFETY NOTICE

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DONT'T DEGRADE THE SAFETY OF THIS SET THROUGH IMPROPER SERVICING.

2.17

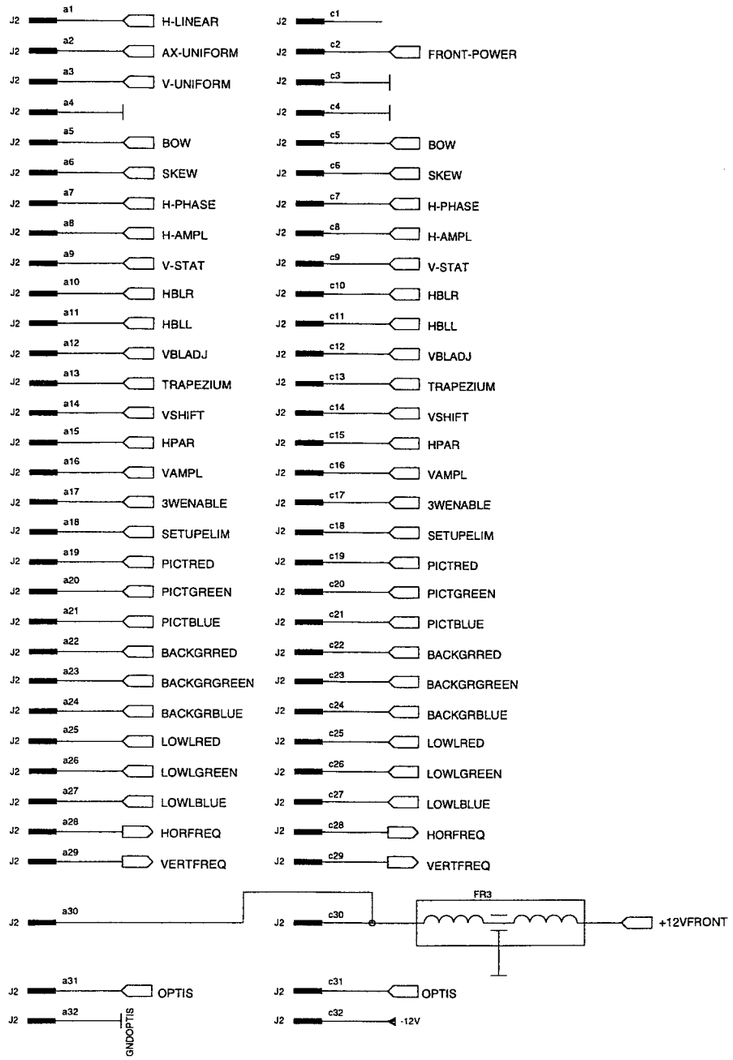
PROCESSOR BOARD CH100

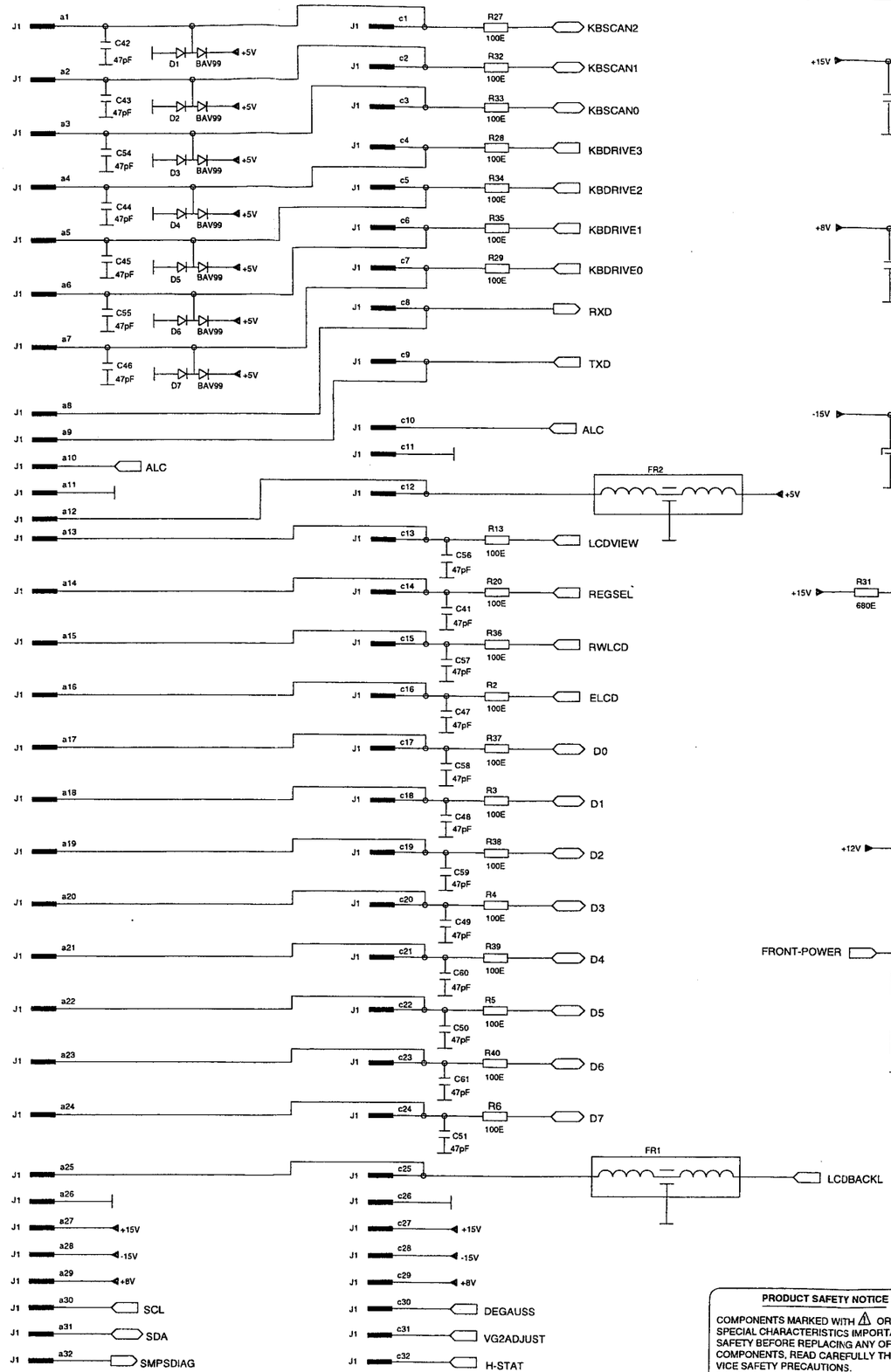
RS232/485 — Sheet 4/6

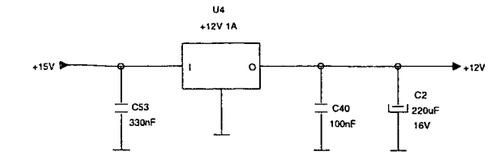
UNIT No : V5623442-V5634444-V5634445

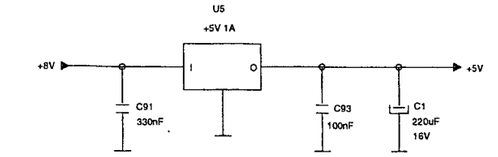
PCB No : V681092 — MKII & V4

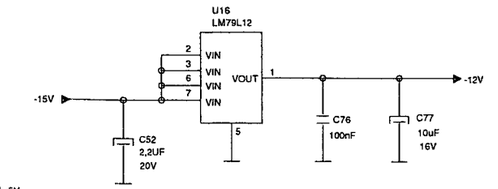
Date : 29 - 05 - 95 — Drawn by : DDG-304

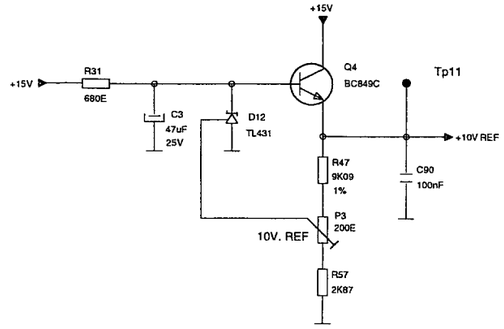


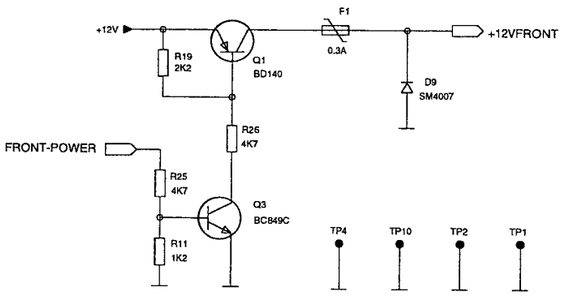

J1 a1 C42 47pF D1 BAV99 +5V
J1 a2 C43 47pF D2 BAV99 +5V
J1 a3 C54 47pF D3 BAV99 +5V
J1 a4 C44 47pF D4 BAV99 +5V
J1 a5 C45 47pF D5 BAV99 +5V
J1 a6 C55 47pF D6 BAV99 +5V
J1 a7 C46 47pF D7 BAV99 +5V
J1 a8
J1 a9
J1 a10 ALC
J1 a11
J1 a12
J1 a13
J1 a14
J1 a15
J1 a16
J1 a17
J1 a18
J1 a19
J1 a20
J1 a21
J1 a22
J1 a23
J1 a24
J1 a25
J1 a26
J1 a27 +15V
J1 a28 -15V
J1 a29 +8V
J1 a30 SCL
J1 a31 SDA
J1 a32 SMPSDIAG
J1 c1 R27 100E KBSCAN2
J1 c2 R32 100E KBSCAN1
J1 c3 R33 100E KBSCAN0
J1 c4 R28 100E KBDRIVE3
J1 c5 R34 100E KBDRIVE2
J1 c6 R35 100E KBDRIVE1
J1 c7 R29 100E KBDRIVE0
J1 c8 RXD
J1 c9 TXD
J1 c10 ALC
J1 c11
J1 c12 FR2 +5V
J1 c13 R13 100E C56 47pF LCDVIEW
J1 c14 R20 100E C41 47pF REGSEL
J1 c15 R36 100E C57 47pF RWLCD
J1 c16 R2 100E C47 47pF ELCD
J1 c17 R37 100E C58 47pF D0
J1 c18 R3 100E C48 47pF D1
J1 c19 R38 100E C59 47pF D2
J1 c20 R4 100E C49 47pF D3
J1 c21 R39 100E C60 47pF D4
J1 c22 R5 100E C50 47pF D5
J1 c23 R40 100E C61 47pF D6
J1 c24 R6 100E C51 47pF D7
J1 c25 FR1 LCDBACKL
J1 c26
J1 c27 +15V
J1 c28 -15V
J1 c29 +8V
J1 c30 DEGAUSS
J1 c31 VG2ADJUST
J1 c32 H-STAT











PRODUCT SAFETY NOTICE

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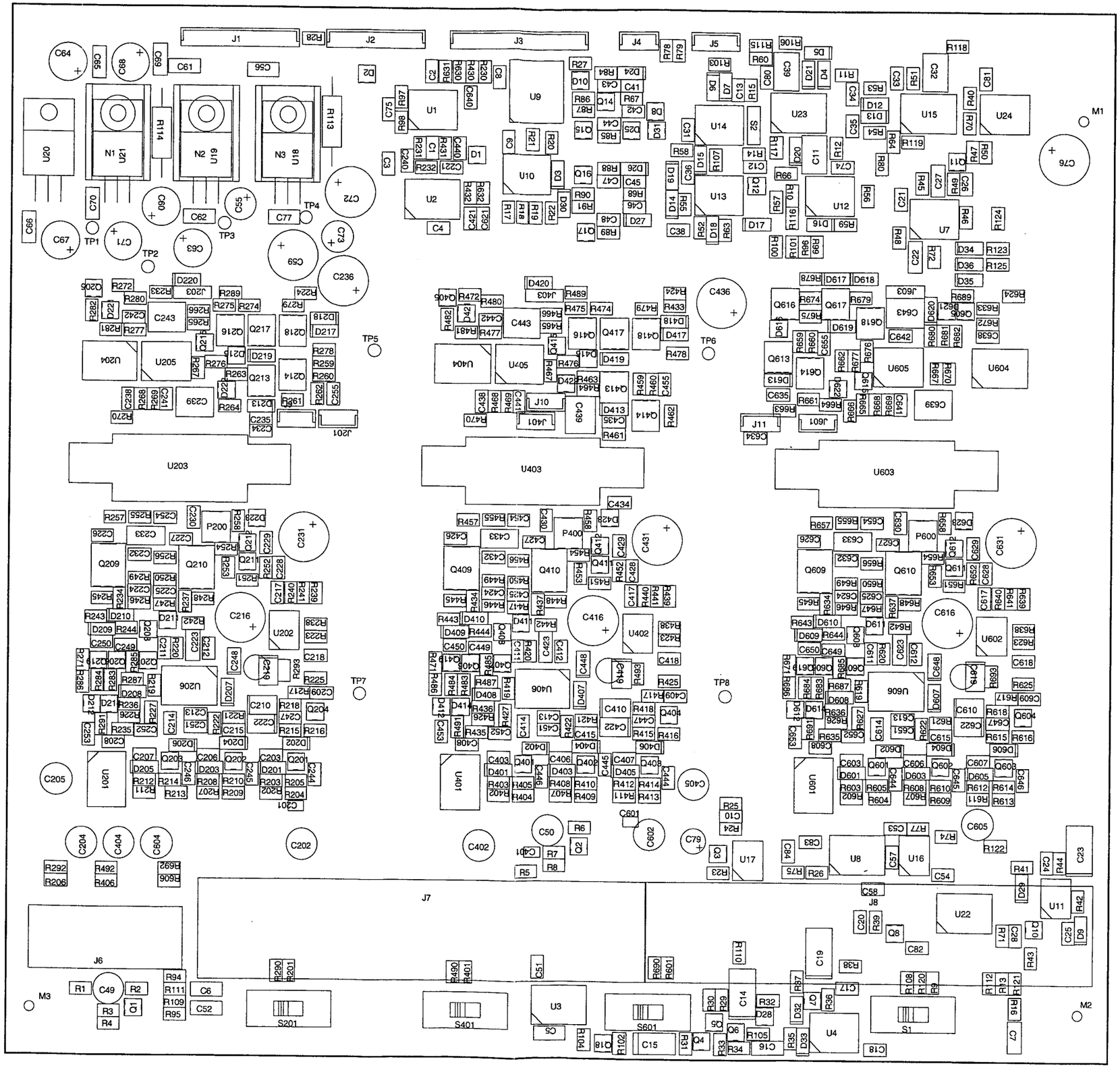
DON'T DEGRADE THE SAFETY OF THIS SET THROUGH IMPROPER SERVICING.

2.19

PROCESSOR BOARD CH100	
POWER & CONNECTIONS	Sheet 6/6
UNIT No : V5634442-V5634444-V5634445	
PCB No : V681092	MKII & V4
Date : 29 - 05 - 95	Drawn by : DDG-304

RGB BOARD


J1
J2
J3
J4
J5
J6
J7
J8
J10
J11
J201
J401
J601
U1
U2
U3
U4
U7
U9
U10
U11
U12
U13
U14
U15
U16
U17
U20
U21
U22
U23
U24
U201
U202
U203
U205
U206
U401
U402
U403
U404
U405
U406
U601
U602
U603
U604
U605
U606
P200
P400
P600
S1
S201
S401
S601
N1
N2
N3
M1
M2
M3
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8

PARTS LIST OF THE PROCESSOR BOARD

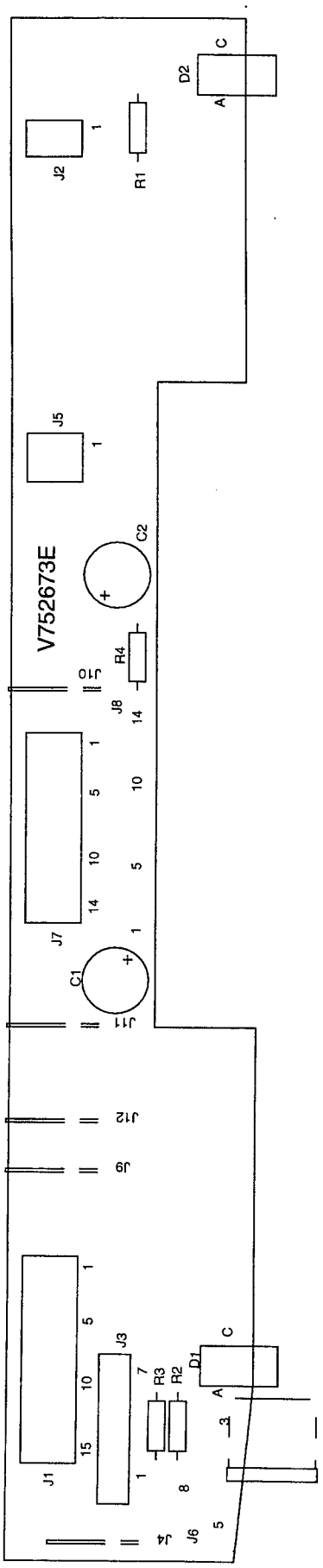
Order number of a complete board: V5634442 (Index: 06)

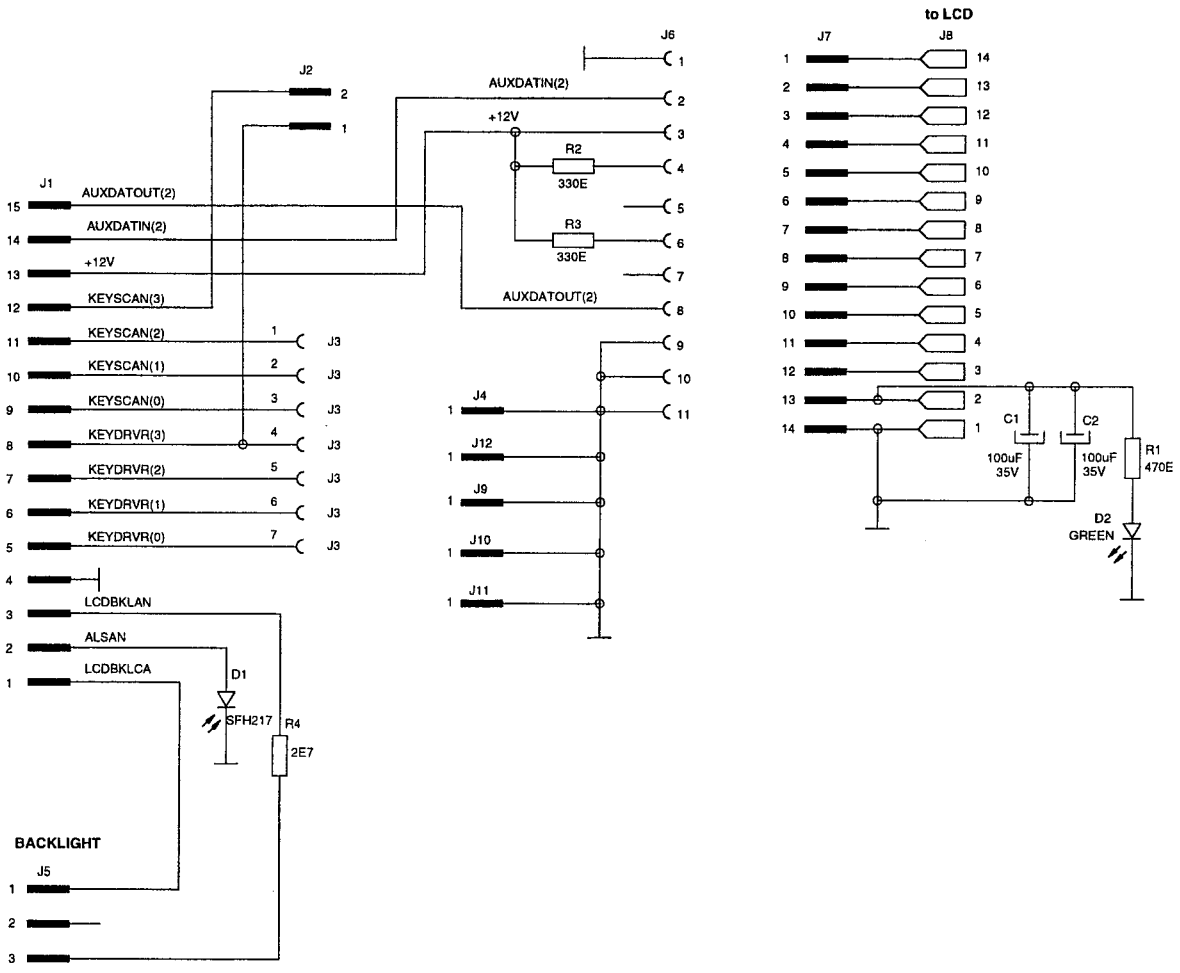
Order number	Description	Item
V106728	R TCE H 5K K 0W5 S10TS 00	P1
V107522	R MCE V200E K 0W5 M10TS 00	P2 ,P3
V1075262	R MCE V 5K K 0W5 M10TS 00	P7
V1075302	R MCE V 50K K 0W5 M10TS 00	P4 ,P8 ,P9
V1075342	R MCE V500K K 0W5 M10TS 00	P5 ,P6
C111467	C EL RA 220M M 16E2 105 00	C1 ,C2
V1115119	C EL RA 47M M 25E2 105 00	C3
V1120516	FLTR EMI 1N M100- 85 01	FR1 ,FR2 ,FR3
V114091	C POMERA 330N K 63E2 85 00	C10 ,C11 ,C12 ,C13 ,C14 ,C15 ,C8
		C16 ,C17 ,C18 ,C19 ,C20 ,C21 ,C9
		C22 ,C23 ,C24 ,C25 ,C26 ,C27 ,
		C30 ,C31 ,C32 ,C33 ,C34 ,C35 ,
		C36 ,C37 ,C4 ,C5 ,C6 ,C7 ,
V114096	C POMERA 1M K 63E2 85 00	C135
V116318	C PP RA 7N68 63E2 85 00	C38
V1163205	C PP RA 14N F 63E2 85 00	C28
V1163239	C PP RA 34N F 63E2 85 00	C29 ,C39
V131437	Q BD140-10 P P TO126 00	Q1
V132773	U 10 DAC DIP18 P 00	U3
V133091	HTSN@ Q TO220 13X10 L 19 00	N1 ,N2
V134044	U 2940CT05LM TO220 P 00	U5
V134050	U 2940CT12LM TO220 P 00	U4
V134117	U 074 TL DIP14 P 00	U10 ,U11 ,U12 ,U13 ,U6 ,U7 ,
		U8 ,U9
V137178	U 24C16 DIP8 P 00	U17
V1371932	U 80C32 12MDIP40 P 00	U1
V137304	U 4067B DIP24 P 00	U14 ,U15
V306821	X 11M059200 30 HC49 00	Y1
C3132531	J U0.6 FBT P28 E1AU TLP 00	0002
C313286	J MD1 C MBT P 3 E1SN 6.7 00	BR1
V313392	J MD SHUNT E1AU 00	0020
V3134911	J U0.3 FBT P 8 E1AU TLP 00	U17
V3135165	REPLACED BY R3135015 00	J3
V3135175	J DE P8 MBS P 9 FUMBLPGDB 00	J4
V313525	J EUR2C MBS P64 E1C2S 1.6 00	J1 ,J2
V3141983	F 0A3 PTC MULTI 00	F1
V3570884	BTN@STAR D 9 M 4 BK 00	0014
V361916	SCR D965 M 3 X 16 STZN 00	0010
V362121	SCR D7985 M 3 X 6 STZN 00	0004
V362122	SCR D7985 M 3 X 8 STZN 00	0008
V366102	NUT D934 M 3 STZN 00	0006
V367401	RVT FULL_R2.4C 7.9 AL 00	0007
K367480	RVT BLND_R3 C 3.5 STAL 00	0013
V367502	SPR D6798AD 3.2D 6 STZN 00	0005
V367650	NUT TRAD M 3 HOOK STNI 00	0003
V3685061	SPR L 7 D 3.4D 6 PLBK 00	0015
V5683008	SOFT CCID12X V3.05 05	U2
V6014101	FRONTPLATE DOWN CCID12XV3 00	0011
V602950	J TESTPIN BT D 00	TP1 ,TP11,TP12
V681092	SMD PROC BOARD CH100 01	PCB1
V716543	REPLACED BY V602950 05	TP10,TP2 ,TP3 ,TP4 ,TP5 ,TP6 ,
		TP7 ,TP8 ,TP9

SMD COMPONENTS OF THE PROCESSOR BOARD V5634401 (Index 00)

Order number	Description	Item
P200349	R# CE H 2E7 F 0W12 1206	R117
P200387	R# CE H100E F 0W12 1206	R10 ,R100,R101,R102,R103,R104, R105,R13 ,R14 ,R2 ,R20 ,R27 , R28 ,R29 ,R3 ,R30 ,R32 ,R33 , R34 ,R35 ,R36 ,R37 ,R38 ,R39 , R4 ,R40 ,R41 ,R43 ,R5 ,R55 , R6 ,R79 ,R82 ,R83 ,R91 ,R92 , R93 ,R94 ,R95 ,R96 ,R99
P200407	R# CE H680E F 0W12 1206	R31
P200411	R# CE H 1K F 0W12 1206	R108,R18
P200413	R# CE H 1K2 F 0W12 1206	R11
P200418	R# CE H 2K F 0W12 1206	R75 ,R76 ,R78
P200419	R# CE H 2K2 F 0W12 1206	R19
P200421	R# CE H 2K7 F 0W12 1206	R1 ,R7
P200427	R# CE H 4K7 F 0W12 1206	R12 ,R21 ,R25 ,R26
P200435	R# CE H 10K F 0W12 1206	R113,R24 ,R50 ,R53 ,R54 ,R56 , R58 ,R59 ,R60 ,R64 ,R65 ,R68 , R71 ,R77 ,R81
P200437	R# CE H 12K F 0W12 1206	R118
P200439	R# CE H 15K F 0W12 1206	R80 ,R84 ,R86 ,R87
P200457	R# CE H 82K F 0W12 1206	R116
P200467	R# CE H220K F 0W12 1206	R119
P200471	R# CE H330K F 0W12 1206	R107
P200483	R# CE H 1M F 0W12 1206	R111,R112,R90
P200491	R# CE H 2M2 F 0W12 1206	R62
P200499	R# CE H 4M7 F 0W12 1206	R74
P206132	R# CE H 23E7 F 0W12 1206	R69 ,R70
P206302	R# CE H 1K4 F 0W12 1206	R16 ,R17 ,R23
P206332	R# CE H 2K87F 0W12 1206	R57
P206355	R# CE H 4K99F 0W12 1206	R106,R109,R42 ,R44 ,R45 ,R46 , R85 ,R88 ,R89 ,R97
P206361	R# CE H 5K76F 0W12 1206	R15 ,R22 ,R9
P206370	R# CE H 7K15F 0W12 1206	R49
P206380	R# CE H 9K09F 0W12 1206	R47
P206432	R# CE H 31K6 F 0W12 1206	R67
P206433	R# CE H 32K4 F 0W12 1206	R48
P206452	R# CE H 51K1 F 0W12 1206	R63
P206465	R# CE H 69K8 F 0W12 1206	R66
P206469	R# CE H 76K8 F 0W12 1206	R52
P206471	R# CE H 80K6 F 0W12 1206	R51
P206521	R# CE H267K F 0W12 1206	R73
P206550	R# CE H536K F 0W12 1206	R61
P206562	R# CE H715K F 0W12 1206	R115
P206567	R# CE H806K F 0W12 1206	R110
P206584	R# CE H 1M21F 0W12 1206	R114,R72 ,R98
P210012	C# COG MU 4P7D 50 1206	C136,C137
P210048	C# X7R MU 150N K 50 1808	C133,C134
P210095	C# X7R MU 330N M 50 1812	C53 ,C91
P210100	C# COG MU 47P J 50 1206	C41 ,C42 ,C43 ,C44 ,C45 ,C46 , C47 ,C48 ,C49 ,C50 ,C51 ,C54 , C55 ,C56 ,C57 ,C58 ,C59 ,C60 , C61
P210102	C# COG MU 470P J 50 1206	C119,C120,C123,C124,C125,C128, C129,C130

Order number	Description	Item
P210122	C# X7R MU 100N K 50 1206	C100,C101,C102,C103,C104,C105, C106,C107,C108,C109,C110,C111, C112,C113,C114,C115,C117,C121, C122,C126,C127,C131,C132,C40 , C62 ,C63 ,C64 ,C65 ,C66 ,C67 , C68 ,C69 ,C70 ,C71 ,C72 ,C73 , C74 ,C75 ,C76 ,C78 ,C79 ,C80 , C81 ,C82 ,C83 ,C84 ,C85 ,C88 , C89 ,C90 ,C92 ,C93 ,C94 ,C95 , C98 ,C99
P210137	C# COG MU 100P J 50 1206	C86 ,C87
P210141	C# COG MU 27P J 50 1206	C116,C118
P212001	C# TA 2M2M 20 3528	C52 ,C96
P212018	C# TA 10M M 16 6032	C77
P230030	U#4053 SO16 I	U26 ,U38
P230051	U#74HCT245 SOL20 I	U20
P230063	U#4051 SO16 I	U28 ,U39
P230095	U#074 TL SO14 P	U40
P230097	U#431 TL SO8 P	D12 ,D24
P230102	U#74HCT00 SO14 I	U27
P230123	U#SRAM 8KX8 70FP28 P	U18
P230342	U#7407 SO14 P	U31 ,U35
P230378	U#3773 MB SOF8 I	U43
P230380	U#75176 SO8 P	U36 ,U37
P230387	U#74HCT138 SO16 I	U22
P230390	U#400 OP SOL16 P	U32
P230422	U#74HCT08 SO14 I	U25
P230424	U#74HCT32 SO14 I	U23
P230427	U#74HCT573 SOL20 I	U19
P230464	U#74HCT574 SOL20 I	U24 ,U29 ,U33 ,U34
P230767	U#79L12A MC SO8 P	U16
P230768	U#5534 NE SO8 P	U21
P230769	U#145406 MC SOL16 P	U30
P230770	U#02 CMP SO8 I	U41
P230771	U#200 OP SOL16 I	U42
P232004	Q#BC849C N SS SOT23	Q3 ,Q4
P232047	Q#BC817-16 N SS SOT23	Q2
P234047	D#BAV99 SER SOT23	D1 ,D10 ,D11 ,D2 ,D20 ,D21 , D22 ,D23 ,D25 ,D3 ,D4 ,D5 , D6 ,D7 ,D8
P234055	D#BAT54 SCH SOT23	D13 ,D14 ,D15 ,D16 ,D17 ,D18 , D19
P234216	D#SM4007 REC DMELF	D9
P243042	LBL N 12.7 X 5.08 WH	STIC
P906016	PCD# P0030016 - V681092	S


V752673E
J1
J2
J3
J5
J6
J7
J8
J9
J10
J11
J12
R1
R2
R3
R4
C1
C2
D1
D2
A
C



PRODUCT SAFETY NOTICE

COMPONENTS MARKED WITH ⚠ OR * HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY BEFORE REPLACING ANY OF THESE COMPONENTS, READ CAREFULLY THE SERVICE SAFETY PRECAUTIONS.
DONT'T DEGRADE THE SAFETY OF THIS SET THROUGH IMPROPER SERVICING.

CONTROL PANEL	CH100
TRINITRON	Sheet 1/1
UNIT No : V5634451	
PCB No : V752673	Version 4
Date : 13-11-95	Drawn by : JN-469

PARTS LIST OF THE CONTROL BOARD

Order number of a complete board: V5634451 (Index: 02)

Order number	Description	Item
V1026423	R MF H 2E74F 0W6 E4	00 R4
V1026505	R MF H332E F 0W6 E4	00 R2 ,R3
V1026655	R MF H475E F 0W6 E4	00 R1
V1114879	C EL RA 100M M 35E2 105	00 C2
V131686	D O SFH203P PIN	00 D1
K133206	D LED D5 S GN HLDR	00 D2
V313102	J CIRC FBS P 8 P	00 J6
V313389	D ACC HLDR D5 P1 TS H10	00 D..1
K3134541	J TAB1 MBS H 4.8S0.5	00 J10 ,J11 ,J12 ,J4 ,J9
V3134685	J USIP FBT P14 E1SN TLP	00 J8
V3136981	J FFC FBT P 7 E1	00 J3
V3137792	J CT H MBS P 2 M2SN WH	00 J2
V3137793	J CT H MBS P 3 M2SN WH	00 J5
V3137804	J CT H MBS P14 M2SN WH	00 J7
V3137805	J CT H MBS P15 M2SN WH	00 J1
V3481034	WU JUMP 0.6 10.16	00 W1 ,W2
V3481044	WU JUMP 0.6 12.7	00 W3
V752382	PCB CTRL PANEL CH100	01 PCB1

INPUT SELECTION

PREAMPLIFIER

BACKGROUND ADJUST

PICTURE ADJUST

CURRENT SOURCE

AKB

AMPLIFIER

AKB LIGHT- MEASURING PULSE

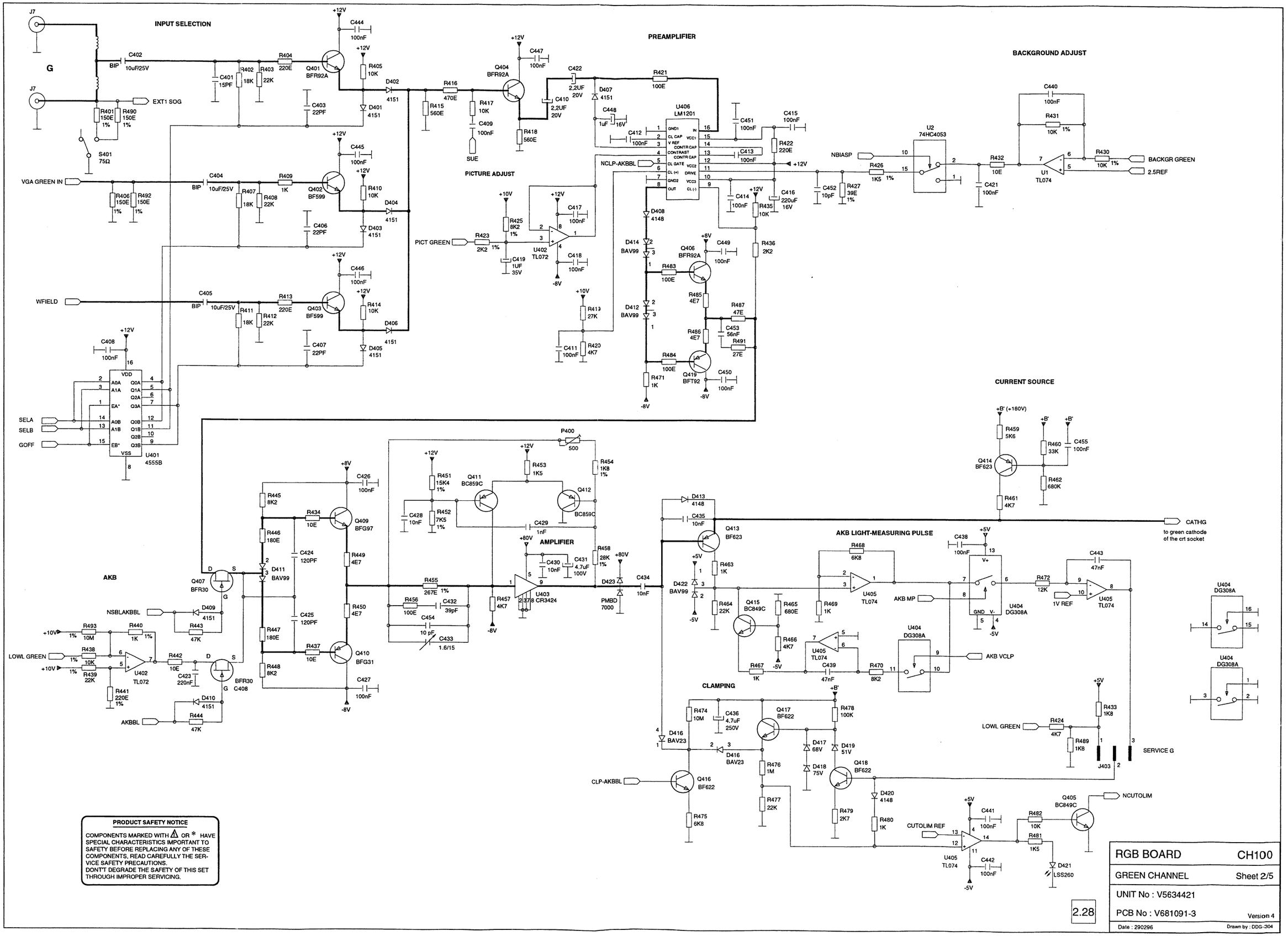
CLAMPING

PRODUCT SAFETY NOTICE

COMPONENTS MARKED WITH ⚠ OR * HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY BEFORE REPLACING ANY OF THESE COMPONENTS, READ CAREFULLY THE SERVICE SAFETY PRECAUTIONS.
DONT'T DEGRADE THE SAFETY OF THIS SET THROUGH IMPROPER SERVICING.

RGB BOARD	CH100
RED CHANNEL	Sheet 1/5
UNIT No : V5634421	
PCB No : V681091-3	Version 4
Date : 290296	Drawn by : DDG-3O4

2.27

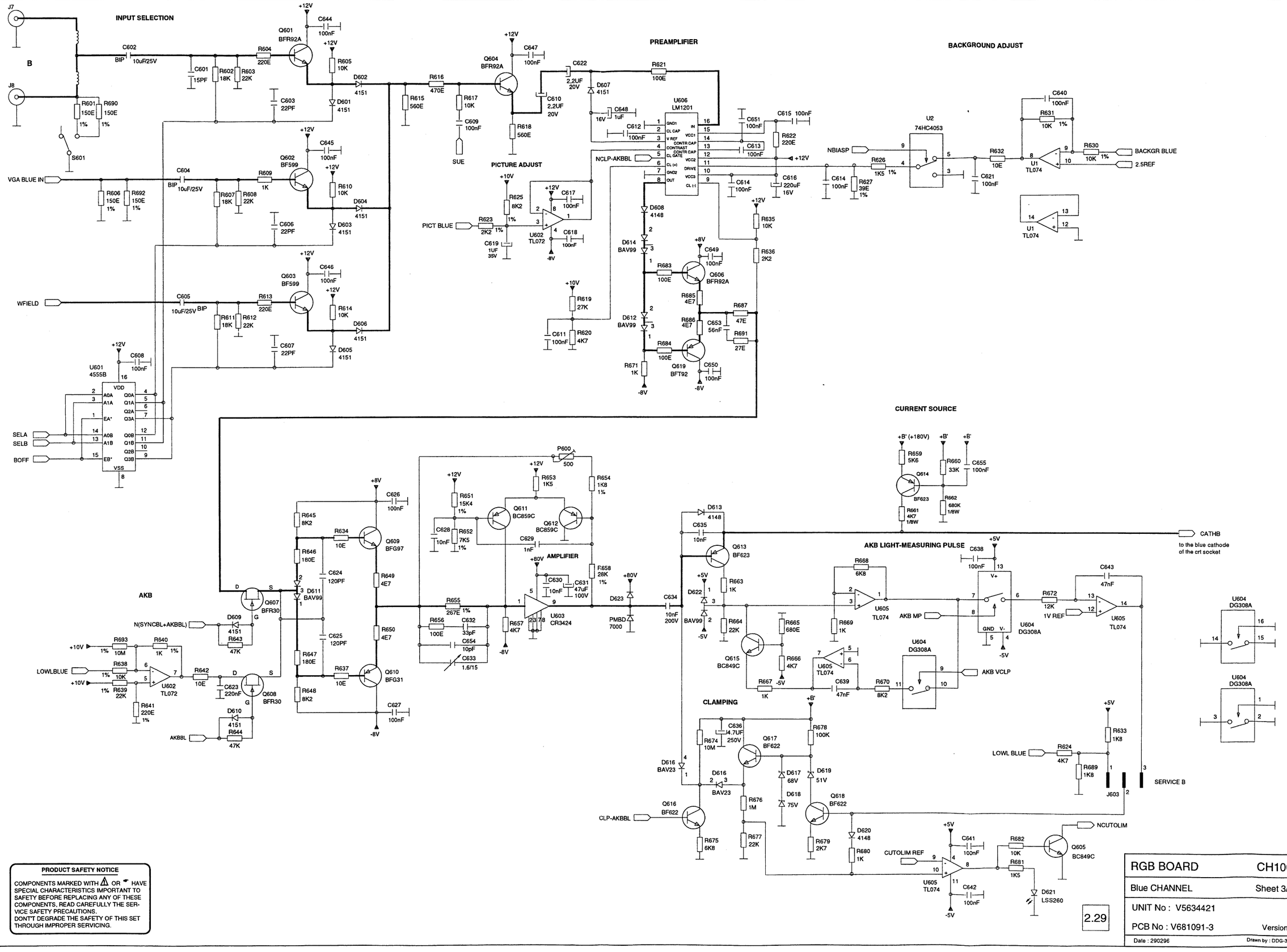


PRODUCT SAFETY NOTICE

COMPONENTS MARKED WITH ⚠ OR * HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY BEFORE REPLACING ANY OF THESE COMPONENTS, READ CAREFULLY THE SERVICE SAFETY PRECAUTIONS.
DONT'T DEGRADE THE SAFETY OF THIS SET THROUGH IMPROPER SERVICING.

RGB BOARD	CH100
GREEN CHANNEL	Sheet 2/5
UNIT No : V5634421	
PCB No : V681091-3	Version 4
Date : 290296	Drawn by : DDG-304

2.28

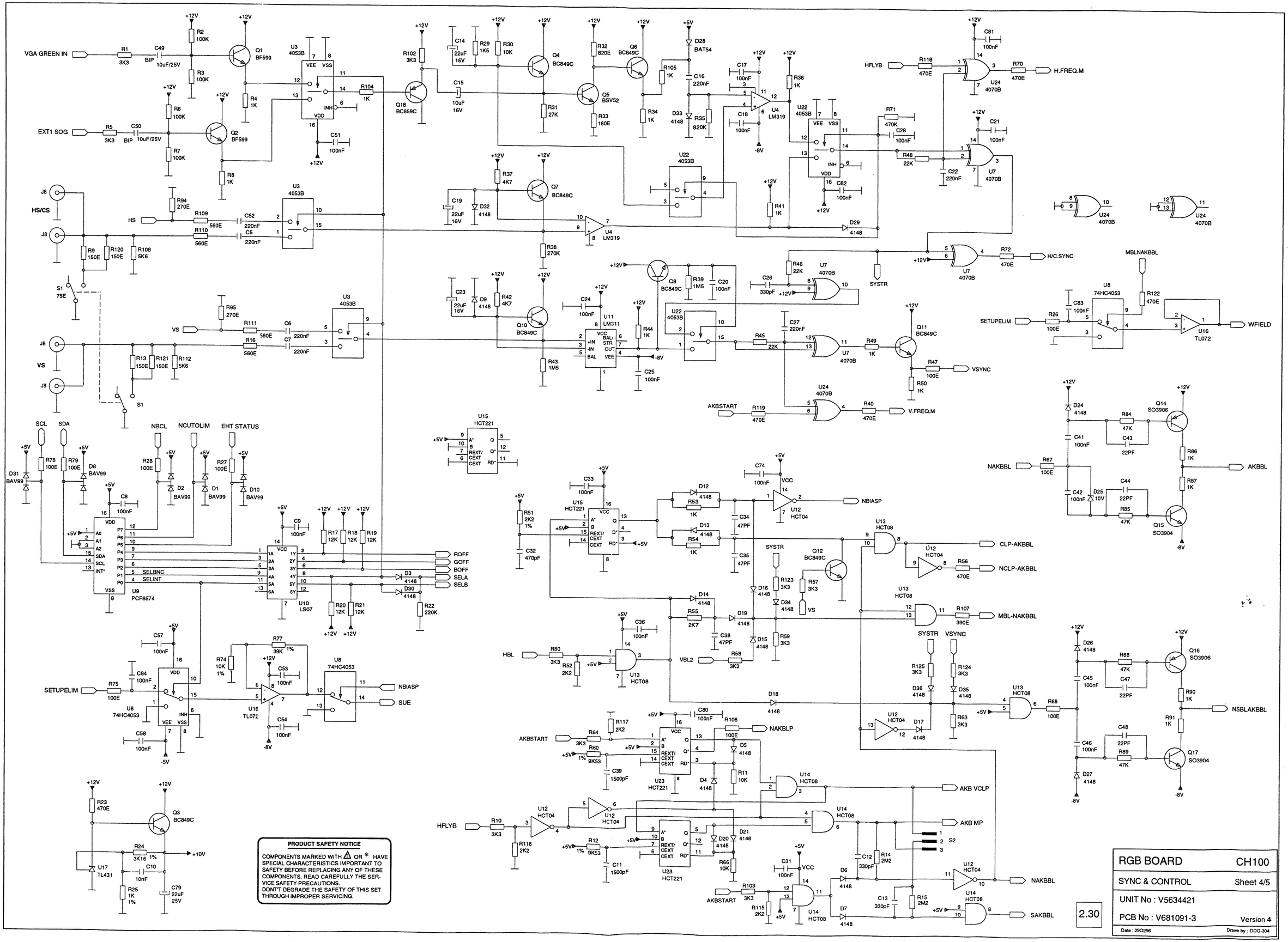


PRODUCT SAFETY NOTICE

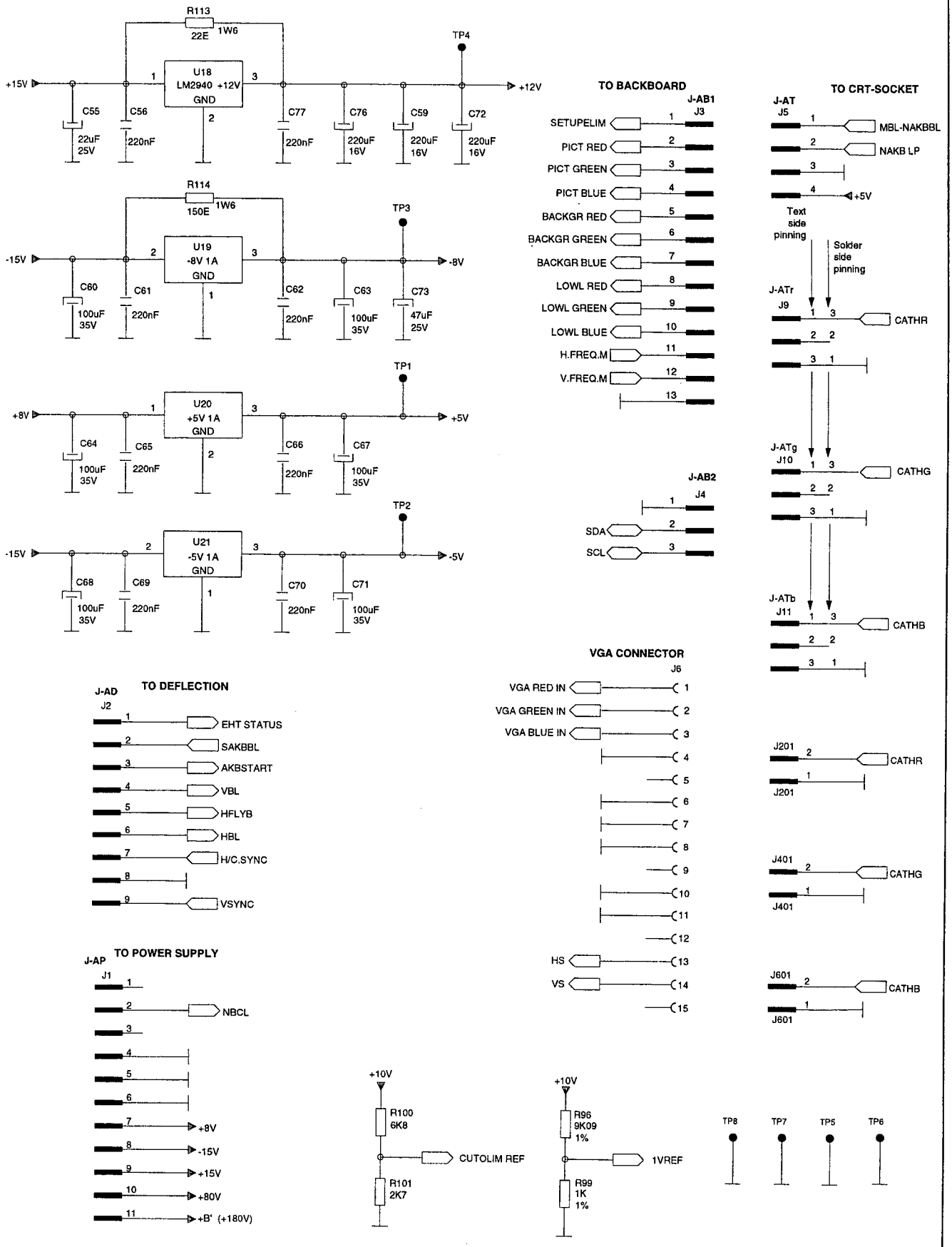
COMPONENTS MARKED WITH ⚠ OR ☛ HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY BEFORE REPLACING ANY OF THESE COMPONENTS, READ CAREFULLY THE SERVICE SAFETY PRECAUTIONS.
DON'T DEGRADE THE SAFETY OF THIS SET THROUGH IMPROPER SERVICING.

RGB BOARD	CH100
Blue CHANNEL	Sheet 3/5
UNIT No : V5634421	
PCB No : V681091-3	Version 4
Date : 290296	Drawn by : DDG-304

2.29



VIDE-V25253 / DRUCK16



PRODUCT SAFETY NOTICE

COMPONENTS MARKED WITH ⚠ OR * HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY BEFORE REPLACING ANY OF THESE COMPONENTS, READ CAREFULLY THE SERVICE SAFETY PRECAUTIONS.
DONT'T DEGRADE THE SAFETY OF THIS SET THROUGH IMPROPER SERVICING.

2.31

RGB BOARD	CH100
POWER & CONNECTIONS	Sheet 5/5
UNIT No : V5634421	
PCB No : V681091-6	Version 4
Date : 290296	Drawn by : DDG-304

PARTS LIST OF THE RGB BOARD

Order number of a complete board: V5634421 (Index: 04)

Order number	Description		Item
V102916	R MF H 22E J 2W E7	00	R113
V102926	R MF H150E J 2W E7	00	R114
V1114123	C EL RA 4M7M250E2 105	00	C231,C236,C431,C436,C631
C111467	C EL RA 220M M 16E2 105	00	C216,C416,C59 ,C616,C72 ,C76
K1114777	C EL RA 100M M 25E2 105	00	C60 ,C63 ,C64 ,C67 ,C68 ,C71
V1115109	C EL RA 22M M 25E2 105	00	C55 ,C79
V1115119	C EL RA 47M M 25E2 105	00	C73
V111679	C EL BRA 10M M 25E2 85	00	C202,C204,C205,C402,C404,C405, C49 ,C50 ,C602,C604,C605
V1151572	C PP RA 470P H100E2 85	00	C32
V1151622	C PP RA 1N5H100E2 85	00	C11 ,C39
V132804	U 3424 CR SOT115-L	00	U203,U403,U603
V133091	HTSN@ Q TO220 13X10 L 19	00	N1 ,N2 ,N3
V134001	U 7805 TO220 P	00	U20
V134007	U 7908 TO220 P	00	U19
C134011	U 7905 TO220 P	00	U21
V134050	U 2940CT12LM TO220 P	00	U18
C313286	J MD1 C MBT P 3 E1SN 6.7	00	J203,J403,J603,S2
C3133921	J MD SHUNT E1SN PULL OUT	00	0008
K3135033	J D SCR/L M/U 7.9-4.85NI	00	0007
K313755	J DE WW FBT P15 FTM	00	J6
V3137813	J CT H MBT P 3 M2SN WH	00	J10 ,J11 ,J201,J4 ,J401,J601, J9
V3137814	J CT H MBT P 4 M2SN WH	00	J5
V3137819	J CT H MBT P 9 M2SN WH	00	J2
V3137821	J CT H MBT P11 M2SN WH	00	J1
V3137823	J CT H MBT P13 M2SN WH	00	J3
V324153	SW SLD MFP 1C BT L 7	00	S1 ,S201,S401,S601
B332113	J BNC FBT P5 SHLD SIP	01	J7 ,J8
C3482005	SLVU OIL D 1.5 L 5 RED	00	0014
K361508	SCR HILO_R 3.2X 16 STZN	00	0006
V362121	SCR D7985 M 3 X 6 STZN	00	0005,0016
V362128	SCR D7985 M 3 X 22 STZN	00	0003
V3636025	SCR D7981C 2.9X 9.5STNI	00	0011
V3685061	SPR L 7 D 3.4D 6 PLBK	00	0010
V3685408	I NUT ST M3 PCB SS	00	0004
V3685506	I NUT SO M3 -14 PCB SS	00	0009
A576258	SPR L15 M 3 H 5 IBRNI	00	0015
V601210	HTSN C HYBRID CH200	01	0002
V601420	INPUTPANEL CCIC12X BNC	01	0013
V602950	J TESTPIN BT D	00	TP1 ,TP2 ,TP3 ,TP4 ,TP5 ,TP6 , TP7 ,TP8
V681091	SMD CCID12X RGB V3	00	PCB1
V7123023	SPRCL 0.5 D 3.2D 7 PLBK	02	0017

SMD COMPONENTS OF THE RGB BOARD VV5634421

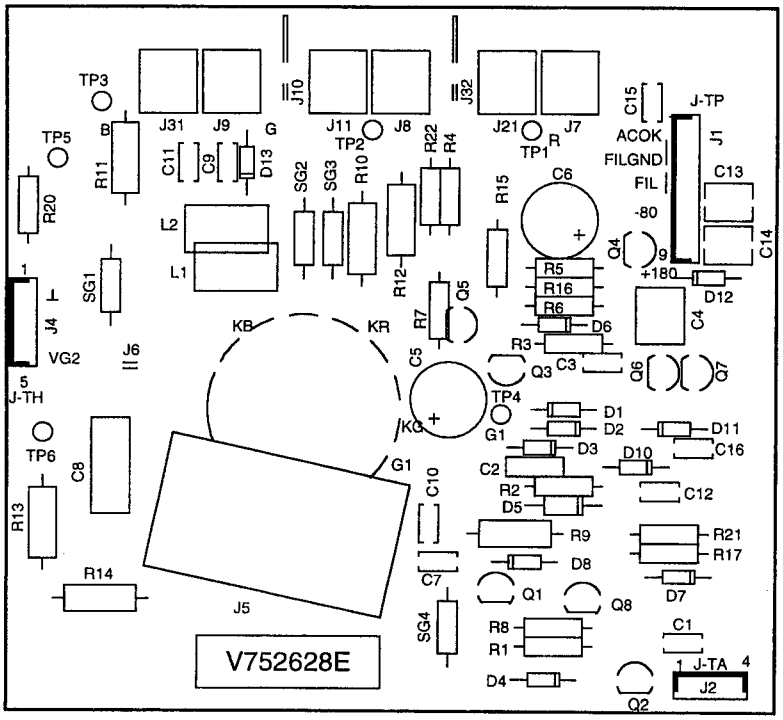
Order number	Description	Item
P200355	R# CE H 4E7 F 0W12 1206	R249,R250,R285,R286,R449,R450, R485,R486,R649,R650,R685,R686
P200363	R# CE H 10E F 0W12 1206	R232,R234,R237,R242,R432,R434, R437,R442,R632,R634,R637,R642
P200373	R# CE H 27E F 0W12 1206	R291,R491,R691
P200377	R# CE H 39E F 0W12 1206	R227,R427,R627
P200379	R# CE H 47E F 0W12 1206	R287,R487,R687
P200387	R# CE H100E F 0W12 1206	R106,R221,R256,R26 ,R27 ,R28 , R283,R284,R421,R456,R47 ,R483, R484,R621,R656,R67 ,R68 ,R683, R684,R75 ,R78 ,R79
P200391	R# CE H150E F 0W12 1206	R120,R121,R13 ,R201,R206,R290, R292,R401,R406,R490,R492,R601, R606,R690,R692,R9
P200393	R# CE H180E F 0W12 1206	R246,R247,R33 ,R446,R447,R646, R647
P200395	R# CE H220E F 0W12 1206	R204,R213,R222,R241,R404,R413, R422,R441,R604,R613,R622,R641
P200397	R# CE H270E F 0W12 1206	R94 ,R95
P200401	R# CE H390E F 0W12 1206	R107
P200403	R# CE H470E F 0W12 1206	R118,R119,R122,R216,R23 ,R40 , R416,R56 ,R616,R70 ,R72
P200405	R# CE H560E F 0W12 1206	R109,R110,R111,R16 ,R215,R218, R415,R418,R615,R618
P200407	R# CE H680E F 0W12 1206	R265,R465,R665
P200409	R# CE H820E F 0W12 1206	R32
P200411	R# CE H 1K F 0W12 1206	R104,R105,R209,R240,R25 ,R263, R267,R269,R271,R280,R34 ,R36 , R4 ,R409,R41 ,R44 ,R440,R463, R467,R469,R471,R480,R49 ,R50 , R53 ,R54 ,R609,R640,R663,R667, R669,R671,R680,R8 ,R86 ,R87 , R90 ,R91 ,R99
P200415	R# CE H 1K5 F 0W12 1206	R226,R253,R281,R29 ,R426,R453, R481,R626,R653,R681
P200417	R# CE H 1K8 F 0W12 1206	R233,R254,R289,R433,R454,R489, R633,R654,R689
P200419	R# CE H 2K2 F 0W12 1206	R115,R116,R117,R223,R236,R423, R436,R51 ,R52 ,R623,R636
P200421	R# CE H 2K7 F 0W12 1206	R279,R479,R55 ,R679
P200423	R# CE H 3K3 F 0W12 1206	R1 ,R10 ,R102,R103,R123,R124, R125,R5 ,R57 ,R58 ,R59 ,R63 , R64 ,R80
P200427	R# CE H 4K7 F 0W12 1206	R220,R224,R257,R261,R266,R37 , R42 ,R420,R424,R457,R461,R466, R620,R624,R657,R661,R666
P200429	R# CE H 5K6 F 0W12 1206	R108,R112,R259,R459,R659
P200431	R# CE H 6K8 F 0W12 1206	R268,R275,R468,R475,R668,R675
P200432	R# CE H 7K5 F 0W12 1206	R252,R452,R652,R97
P200433	R# CE H 8K2 F 0W12 1206	R225,R245,R248,R270,R425,R445, R448,R470,R625,R645,R648,R670

Order number	Description	Item
P200435	R# CE H 10K F 0W12 1206	R11 ,R205,R210,R214,R217,R230, R231,R235,R238,R282,R30 ,R405, R410,R414,R417,R430,R431,R435, R438,R482,R605,R610,R614,R617, R630,R631,R635,R638,R66 ,R682, R74
P200437	R# CE H 12K F 0W12 1206	R17 ,R18 ,R19 ,R20 ,R21 ,R272, R472,R672
P200441	R# CE H 18K F 0W12 1206	R202,R207,R211,R402,R407,R411, R602,R607,R611
P200443	R# CE H 22K F 0W12 1206	R203,R208,R212,R239,R264,R277, R403,R408,R412,R439,R45 ,R46 , R464,R477,R48 ,R603,R608,R612, R639,R664,R677
P200445	R# CE H 27K F 0W12 1206	R219,R31 ,R419,R619
P200447	R# CE H 33K F 0W12 1206	R260,R460,R660
P200449	R# CE H 39K F 0W12 1206	R77
P200451	R# CE H 47K F 0W12 1206	R243,R244,R443,R444,R643,R644, R84 ,R85 ,R88 ,R89
P200459	R# CE H100K F 0W12 1206	R2 ,R278,R3 ,R478,R6 ,R678, R7
P200467	R# CE H220K F 0W12 1206	R22
P200469	R# CE H270K F 0W12 1206	R38
P200475	R# CE H470K F 0W12 1206	R71
P200479	R# CE H680K F 0W12 1206	R262,R462,R662
P200481	R# CE H820K F 0W12 1206	R35
P200483	R# CE H 1M F 0W12 1206	R276,R476,R676
P200487	R# CE H 1M5 F 0W12 1206	R39 ,R43
P200491	R# CE H 2M2 F 0W12 1206	R14 ,R15
P200507	R# CE H 10M F 0W12 1206	R274,R293,R474,R493,R674,R693
P201387	R#TCE H500E M 0W1 S4 TS	P200,P400,P600
P206233	R# CE H267E F 0W12 1206	R255,R455,R655
P206326	R# CE H 2K49F 0W12 1206	R98
P206328	R# CE H 2K61F 0W12 1206	R101
P206336	R# CE H 3K16F 0W12 1206	R24
P206368	R# CE H 6K81F 0W12 1206	R100
P206380	R# CE H 9K09F 0W12 1206	R96
P206382	R# CE H 9K53F 0W12 1206	R12 ,R60
P206402	R# CE H 15K4 F 0W12 1206	R251,R451,R651
P206427	R# CE H 28K F 0W12 1206	R258,R458,R658
P2100130	C# COG MU 1N J 50 1206	C229,C429,C629
P2100160	C# COG MU 15P J 50 0805	C201,C401,C601
P210049	C# X7R MU 220N K 50 1808	C16 ,C22 ,C223,C27 ,C423,C5 , C52 ,C56 ,C6 ,C61 ,C62 ,C623, C65 ,C66 ,C69 ,C7 ,C70 ,C77
P2100640	C# COG MU 22P J 50 1206	C203,C206,C207,C403,C406,C407, C43 ,C44 ,C47 ,C48 ,C603,C606, C607
P2100920	C# X7R MU 10N K 50 1206	C10 ,C228,C235,C428,C435,C628, C635
P2101000	C# COG MU 47P J 50 1206	C34 ,C35 ,C38
P2101040	C# X7R MU 56N J 50 1206	C253,C453,C653
P2101210	C# COG MU 330P J 50 1206	C12 ,C13 ,C26

Order number	Description	Item
P2101220	C# X7R MU 100N K 50 1206	C1 ,C17 ,C18 ,C2 ,C20 ,C208, C209,C21 ,C211,C212,C213,C214, C215,C217,C218,C221,C226,C227, C238,C24 ,C240,C241,C242,C244, C245,C246,C247,C249,C25 ,C250, C251,C255,C28 ,C3 ,C31 ,C33 , C36 ,C4 ,C408,C409,C41 ,C411, C412,C413,C414,C415,C417,C418, C42 ,C421,C426,C427,C438,C440, C441,C442,C444,C445,C446,C447, C449,C45 ,C450,C451,C455,C46 , C51 ,C53 ,C54 ,C57 ,C58 ,C608, C609,C611,C612,C613,C614,C615, C617,C618,C621,C626,C627,C638, C640,C641,C642,C644,C645,C646, C647,C649,C650,C651,C655,C74 , C75 ,C8 ,C80 ,C81 ,C82 ,C83 , C84 ,C9
P2101380	C# COG MU 10P J 50 1206	C252,C254,C452,C454,C652,C654
P2101610	C# COG MU 120P J 50 1206	C224,C225,C424,C425,C624,C625
P2101650	C# COG MU 39P J 50 1206	C232,C432,C632
P2102190	C# X7R MU 10N K200 1206	C230,C234,C430,C434,C630,C634
P212001	C# TA 2M2M 20 3528	C210,C222,C410,C422,C610,C622
P212009	C# TA 1M M 16 3216	C248,C448,C648
P212016	C# TA 1M K 35 3528	C219,C419,C619
P212018	C# TA 10M M 16 6032	C15
P212031	C# TA 22M M 16 7343	C14 ,C19 ,C23
P214201	C#TV 20P 25 C4X3	C233,C433,C633
P215104	C# PHMEMU 47N K 25 2220	C239,C243,C439,C443,C639,C643
P230003	U#311 LM SO8 P	U11
P230030	U#4053 SO16 I	U22 ,U3
P230040	U#4070 SO14 I	U24 ,U7
P230095	U#074 TL SO14 P	U1 ,U205,U405,U605
P230097	U#431 TL SO8 P	U17
P230099	U#072 TL SO8 P	U16 ,U202,U402,U602
P230103	U#74HCT04 SO14 I	U12
P230216	U#74HC4053 SO16 I	U2 ,U8
P230342	U#7407 SO14 P	U10
P230422	U#74HCT08 SO14 I	U13 ,U14
P230479	U#74HCT221 SO16 I	U15 ,U23
P230528	U#319 LM SO14 P	U4
P230543	U#8574 PCF SOL16 P	U9
P230706	U#308A DG SO16 I	U204,U404,U604
P230773	U#4555 SO16 I	U201,U401,U601
P230774	U#1201 LM SO16 P	U206,U406,U606
P232004	Q#BC849C N SS SOT23	Q10 ,Q11 ,Q12 ,Q205,Q215,Q3 , Q4 ,Q405,Q415,Q6 ,Q605,Q615, Q7 ,Q8
P232012	Q#BFR30 F SS SOT23	Q207,Q208,Q407,Q408,Q607,Q608
P232021	Q#BF599 N SS SOT23	Q1 ,Q2 ,Q202,Q203,Q402,Q403, Q602,Q603
P232033	Q#BSV52 N SS SOT23	Q5
P232060	Q#SO3904 N SS SOT23	Q15 ,Q17
P232061	Q#SO3906 P SS SOT23	Q14 ,Q16

Order number	Description	Item
P232062	Q#BF622 N SS SOT89	Q216,Q217,Q218,Q416,Q417,Q418, Q616,Q617,Q618
P232090	Q#BFR92A N SS SOT23	Q201,Q204,Q206,Q401,Q404,Q406, Q601,Q604,Q606
P232091	Q#BFT92 P SS SOT23	Q219,Q419,Q619
P232092	Q#BF623 P SS SOT89	Q213,Q214,Q413,Q414,Q613,Q614
P232101	Q#BC859C P SS SOT23	Q18 ,Q211,Q212,Q411,Q412,Q611, Q612
P232108	Q#BFG97 N SS SOT223	Q209,Q409,Q609
P232109	Q#BFG31 P SS SOT223	Q210,Q410,Q610
P234040	D#LED LSS260 RED SOT23	D221,D421,D621
P234047	D#BAV99 SER SOT23	D1 ,D10 ,D2 ,D211,D212,D214, D222,D31 ,D411,D412,D414,D422, D611,D612,D614,D622,D8
P234052	D#BAV23 DUA SOT143	D216,D416,D616
P234055	D#BAT54 SCH SOT23	D28
P234074	D#ZEN 10V 0W3 C SOT23	D25
P234099	D#4148 R DMMELF	D12 ,D13 ,D14 ,D15 ,D16 ,D17 , D18 ,D19 ,D20 ,D208,D21 ,D213, D220,D24 ,D26 ,D27 ,D29 ,D3 , D30 ,D32 ,D33 ,D34 ,D35 ,D36 , D4 ,D408,D413,D420,D5 ,D6 , D608,D613,D620,D7 ,D9
P234118	D#S MBD7000 100215 SOT23	D223,D423,D623
P234173	D#LL4151 SW DMMELF	D201,D202,D203,D204,D205,D206, D207,D209,D210,D401,D402,D403, D404,D405,D406,D407,D409,D410, D601,D602,D603,D604,D605,D606, D607,D609,D610
P234203	D#ZEN 51V 0W5 C DMMELF	D219,D419,D619
P234240	D#ZEN 68V 0W5 C DMMELF	D217,D417,D617
P234241	D#ZEN 75V 0W5 C DMMELF	D218,D418,D618
P243042	LBL N 12.7 X 5.08 WH	STIC
P906011	PCD# P0025011 - V681091	S

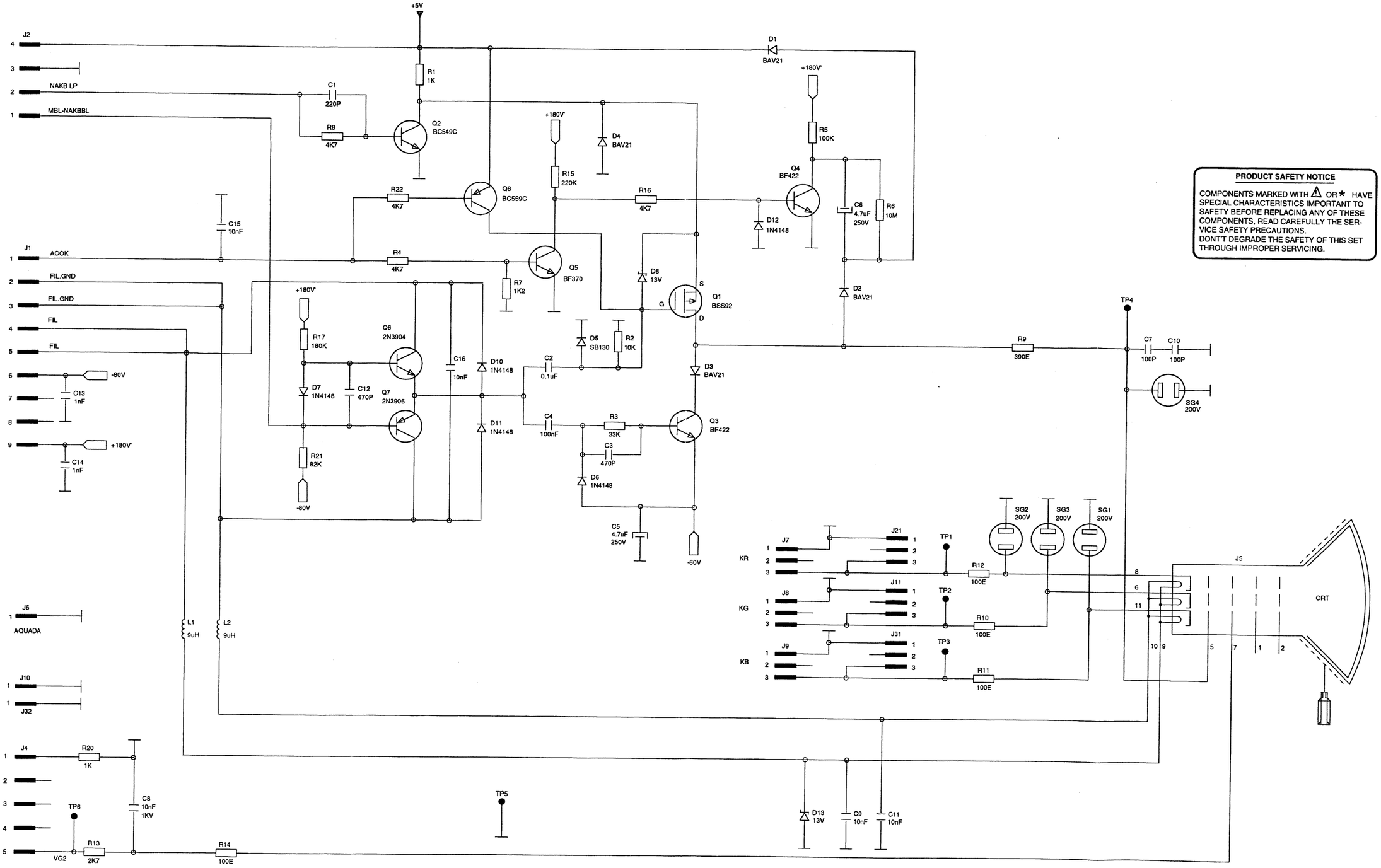
CRT SOCKET


TP3
TP5
TP6
TP2
TP1
TP4
J31
J9
J10
J11
J8
J32
J21
J7
J-TP
J1
J4
J6
J5
J2
J-TH
J-TA
VG2
ACOK
FILGND
FIL
-80
+180
KB
KR
KG
G1
V752628E

PARTS LIST OF THE CRT SOCKET UNIT

Order number of a complete unit: V5634465 (Index: 01)

Order number	Description	Item
V101263	R MF H180K J 0W5 E4	00 R17
V101284	R MF H 10M J 0W5 E4	00 R6
V102024	R CC H100E K 0W5	00 R10 ,R11 ,R12 ,R14
V102031	R CC H390E K 0W5	00 R9
V102041	R CC H 2K7 K 0W5	00 R13
V1026006	R MF H 1K F 0W6 E4	00 R1 ,R20
V1026007	R MF H 10K F 0W6 E4	00 R2
V1026008	R MF H100K F 0W6 E4	00 R5
V1026086	R MF H 1K21F 0W6 E4	00 R7
V1026338	R MF H221K F 0W6 E4	00 R15
V1026507	R MF H 33K2 F 0W6 E4	00 R3
V1026656	R MF H 4K75F 0W6 E4	00 R16 ,R22 ,R4 ,R8
V1026887	R MF H 82K5 F 0W6 E4	00 R21
V1114123	C EL RA 4M7M250E2 105	00 C5 ,C6
V1117581	C CE DI 10N M102E3 HV	00 C8
V1127510	C X7R MU 10N K 50E2 125	00 C11 ,C15 ,C16 ,C9
C112825	C CE DI 1N S400E2	00 C13 ,C14
V112900	C COG MU 100P J100E2 125	00 C10 ,C7
V112904	C COG MU 220P J100E2 125	00 C1
V112908	C COG MU 470P J100E2 125	00 C12 ,C3
V1140426	C POMERA 100N K250E2 85	00 C4
V114088	C POMERA 100N K 63E2 85	00 C2
V131265	SURGE ARRESTER 200V AX	00 SG1 ,SG2 ,SG3 ,SG4
V131411	Q BC549C N SS TO92	00 Q2
V1314182	Q BC559C P SS TO92	00 Q8
V131494	Q 2N3904 N SS TO92	00 Q6
V131496	Q 2N3906 P SS TO92	00 Q7
V1316211	D S 1N4148 075150 DO35	00 D10 ,D11 ,D12 ,D6 ,D7
V131627	D S BAV21 200250 DO35	00 D1 ,D2 ,D3 ,D4
V131741	D ZEN 13V 0W5 C DO35	00 D13 ,D8
V131930	D Y 0301A0 DO41	00 D5
V132513	Q BF370 N SS TO92	00 Q5
V132516	Q BF422 N SS TO92	00 Q3 ,Q4
V132624	Q BSS92 FP SS TO92	00 Q1
V306100	CH AX NS 9 UH	00 L1 ,L2
V311044	J CRT FBT B10-304 SKT	00 J5
V3137793	J CT H MBS P 3 M2SN WH	00 J11 ,J21 ,J31 ,J7 ,J8 ,J9
V3137814	J CT H MBT P 4 M2SN WH	00 J2
V3137815	J CT H MBT P 5 M2SN WH	00 J4
V3137819	J CT H MBT P 9 M2SN WH	00 J1
V315319	J TAB1 MBT H 6.3S0.8	00 J6
V315353	J TAB1 BS H2.8S0.5	00 J10 ,J32
V602950	J TESTPIN BT D	00 TP1 ,TP2 ,TP3 ,TP4 ,TP5 ,TP6
V752628	PCB CRT SOCK CCID121 V3	00 PCB1



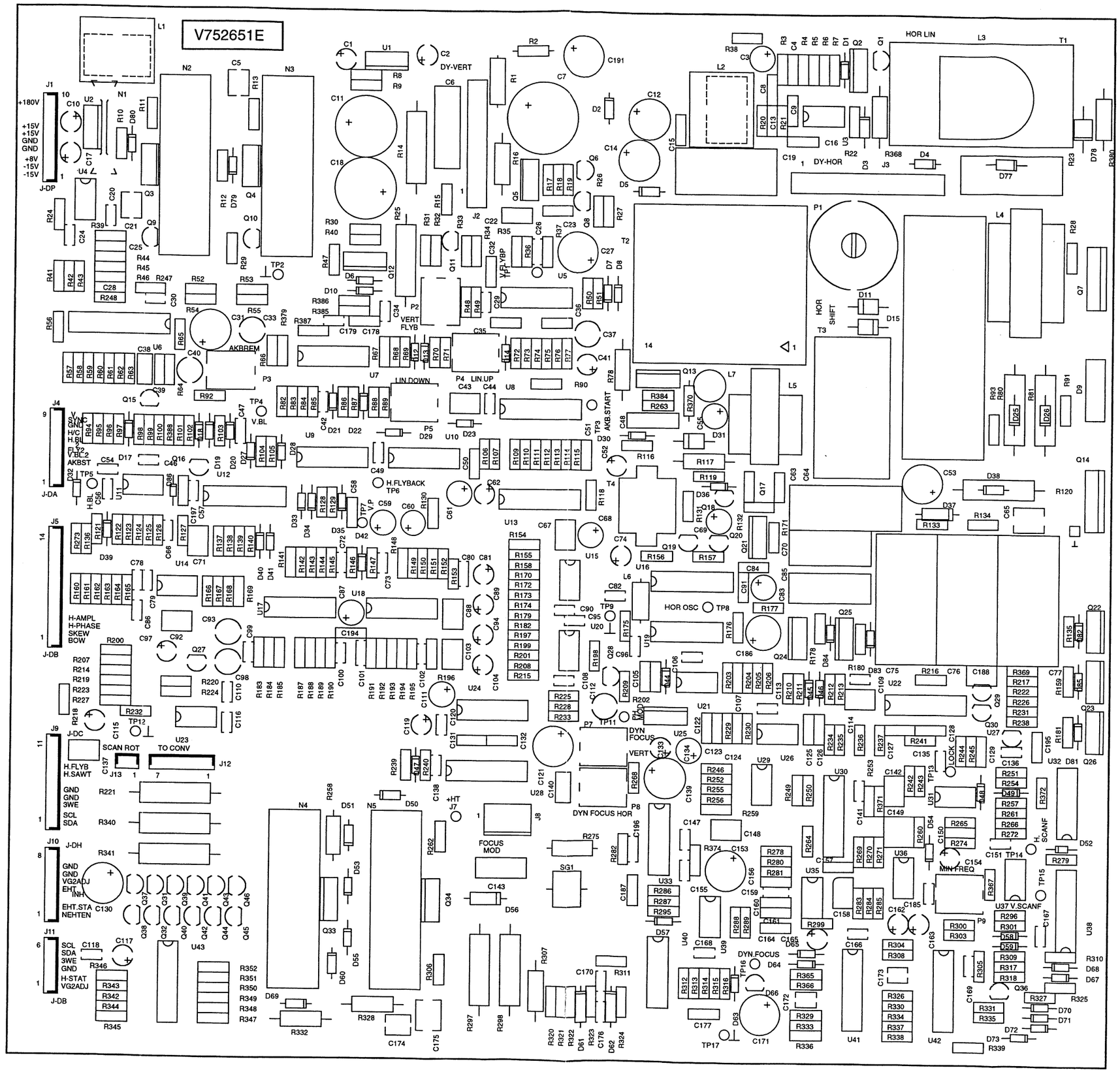
PRODUCT SAFETY NOTICE

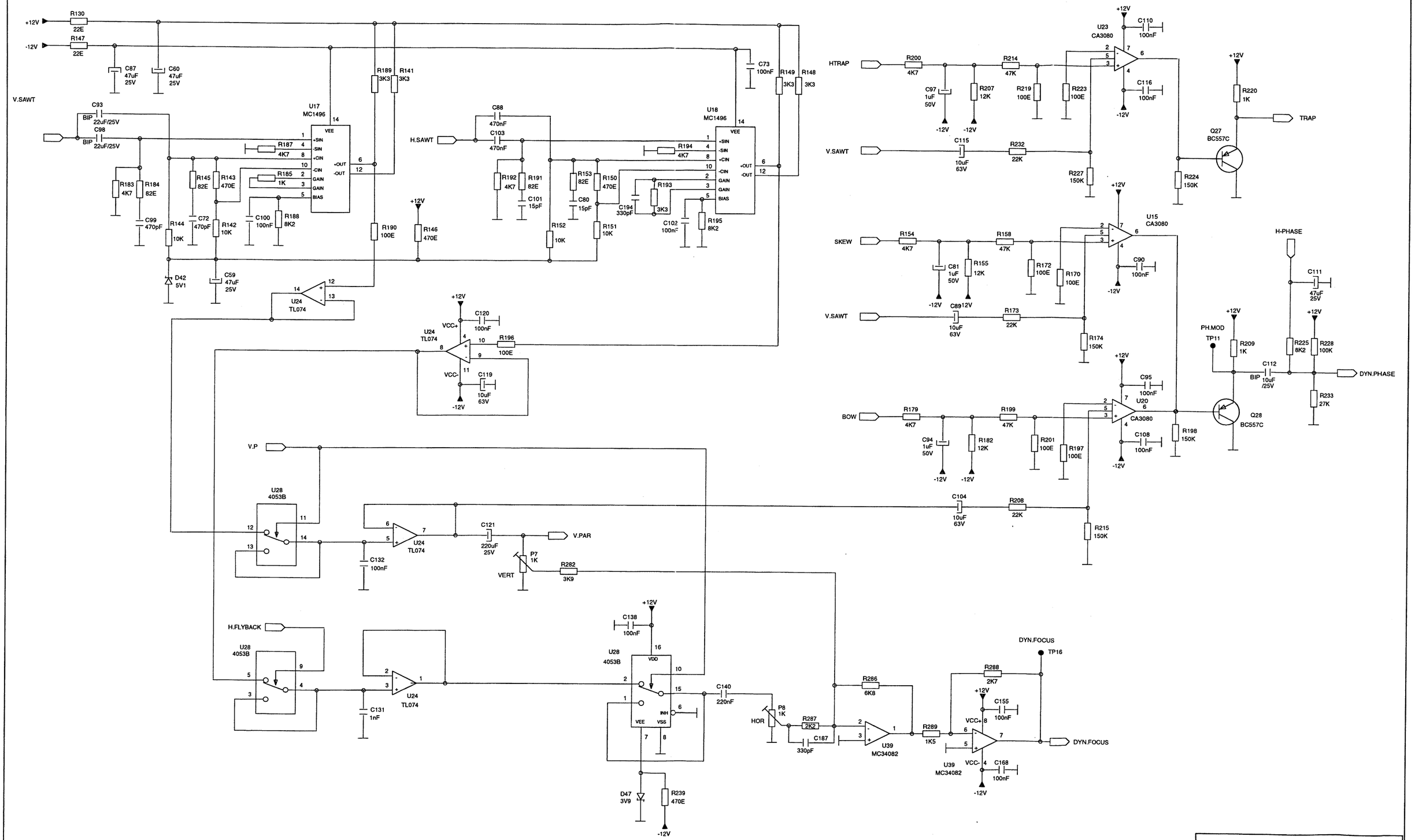
COMPONENTS MARKED WITH ⚠ OR * HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY BEFORE REPLACING ANY OF THESE COMPONENTS, READ CAREFULLY THE SERVICE SAFETY PRECAUTIONS.
DONT'T DEGRADE THE SAFETY OF THIS SET THROUGH IMPROPER SERVICING.

CRT SOCKET	CH100
SHADOW MASK	Sheet 1/1
UNIT No : V5634465	
PCB No : V752628	V4
Date : 20-10-94	Drawn by : DDG-304

2.38

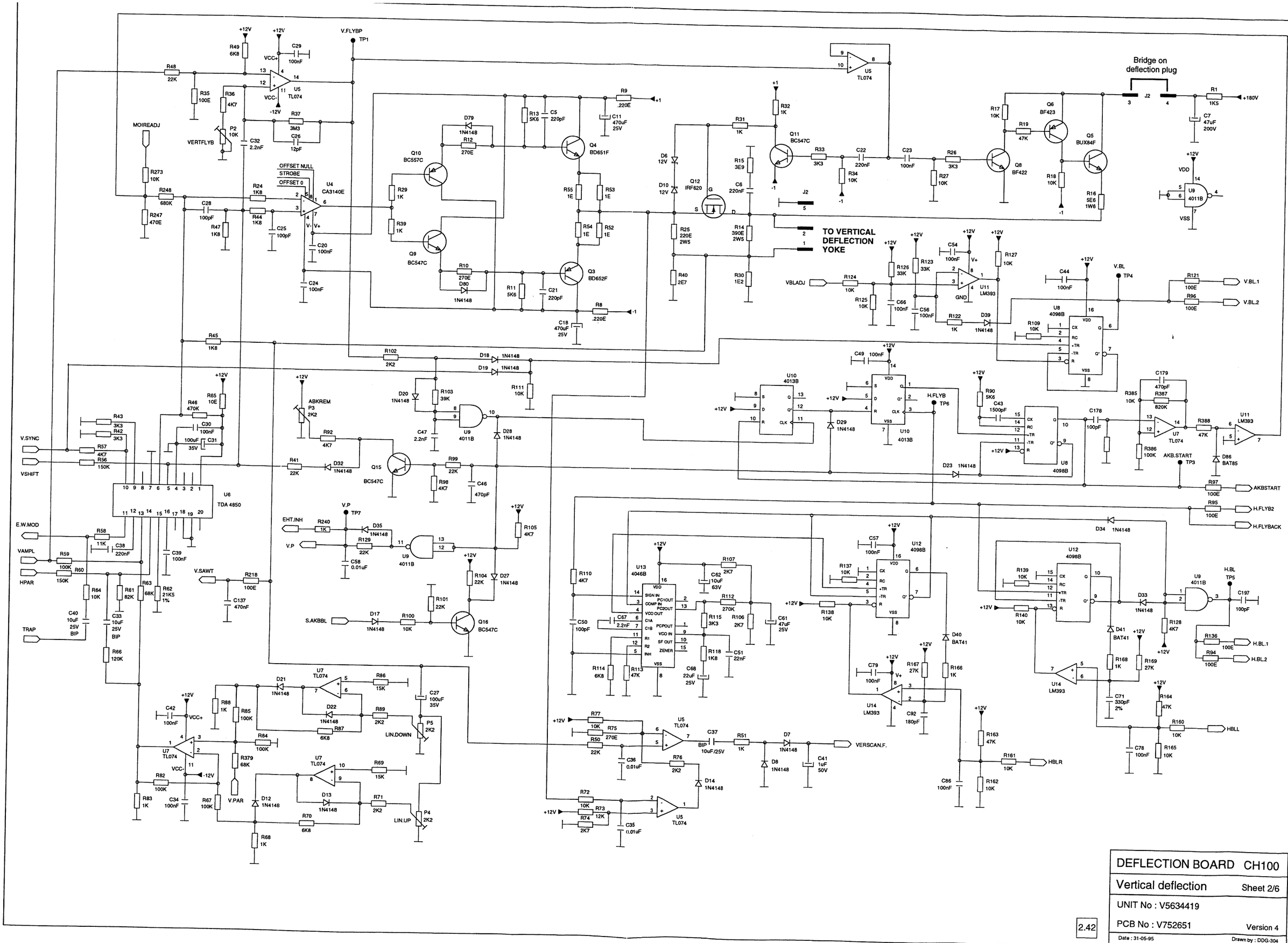
DEFLECTION BOARD

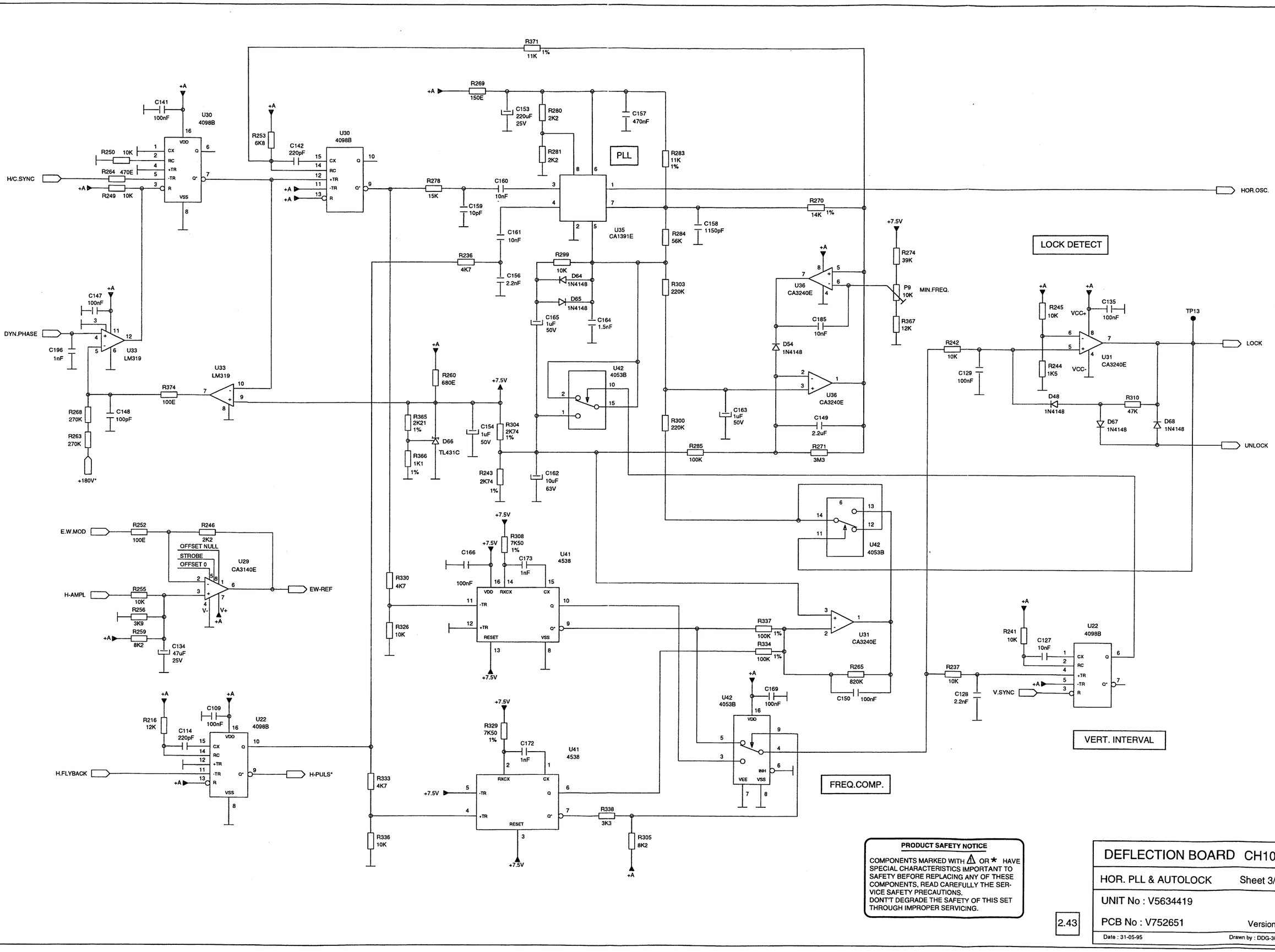




DEFLECTION BOARD CH100	
	Sheet 1/6
UNIT No : V5634419	
PCB No : V752651	Version 4
Date : 31-05-95	Drawn by : DDG-304

2.41


Bridge on deflection plug
TO VERTICAL DEFLECTION YOKE
DEFLECTION BOARD CH100
Vertical deflection
Sheet 2/6
UNIT No : V5634419
PCB No : V752651
Version 4
Date : 31-05-95
Drawn by : DDG-304
2.42
VIDE-V25253 / DRUCK20



PRODUCT SAFETY NOTICE

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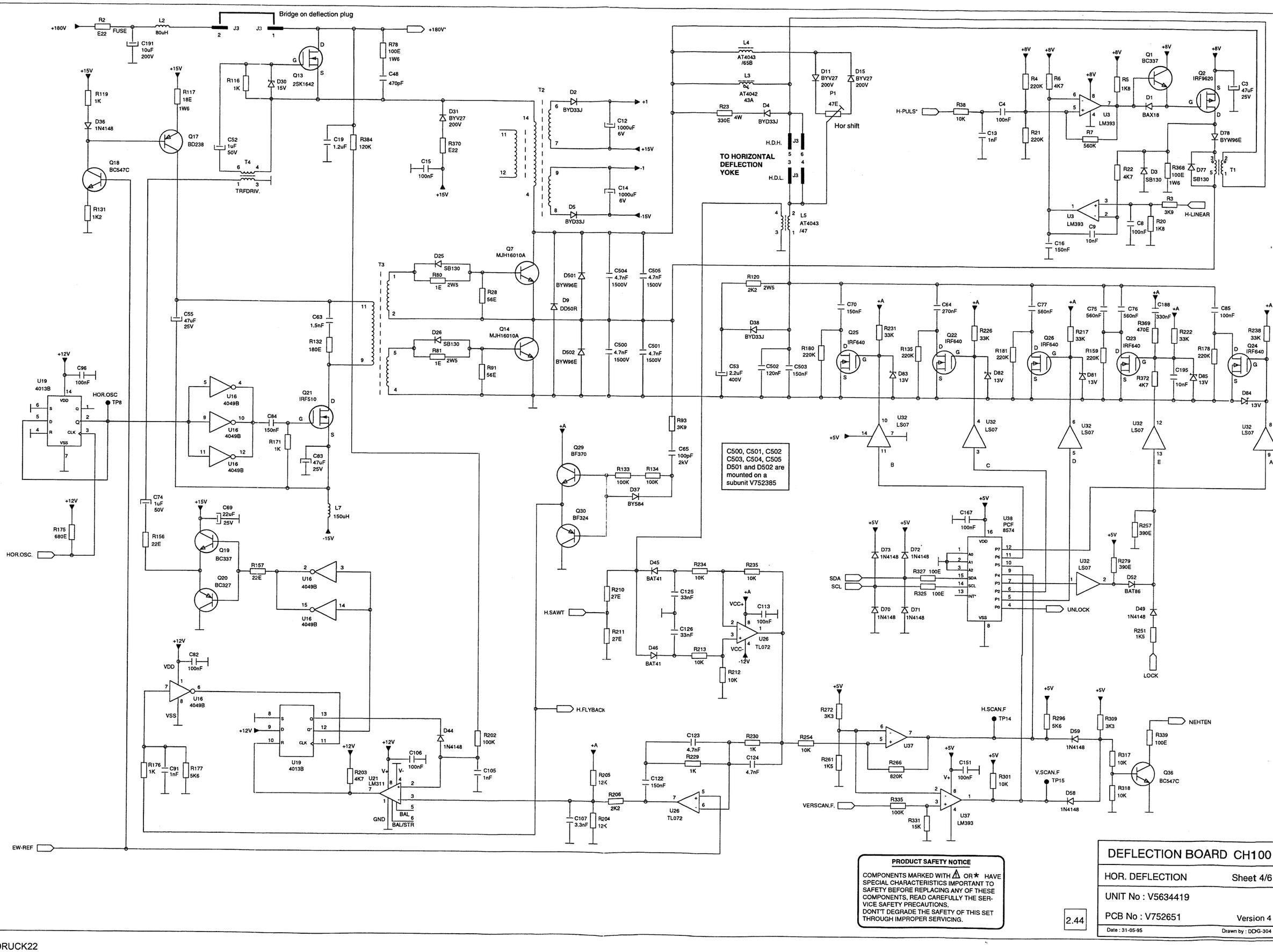
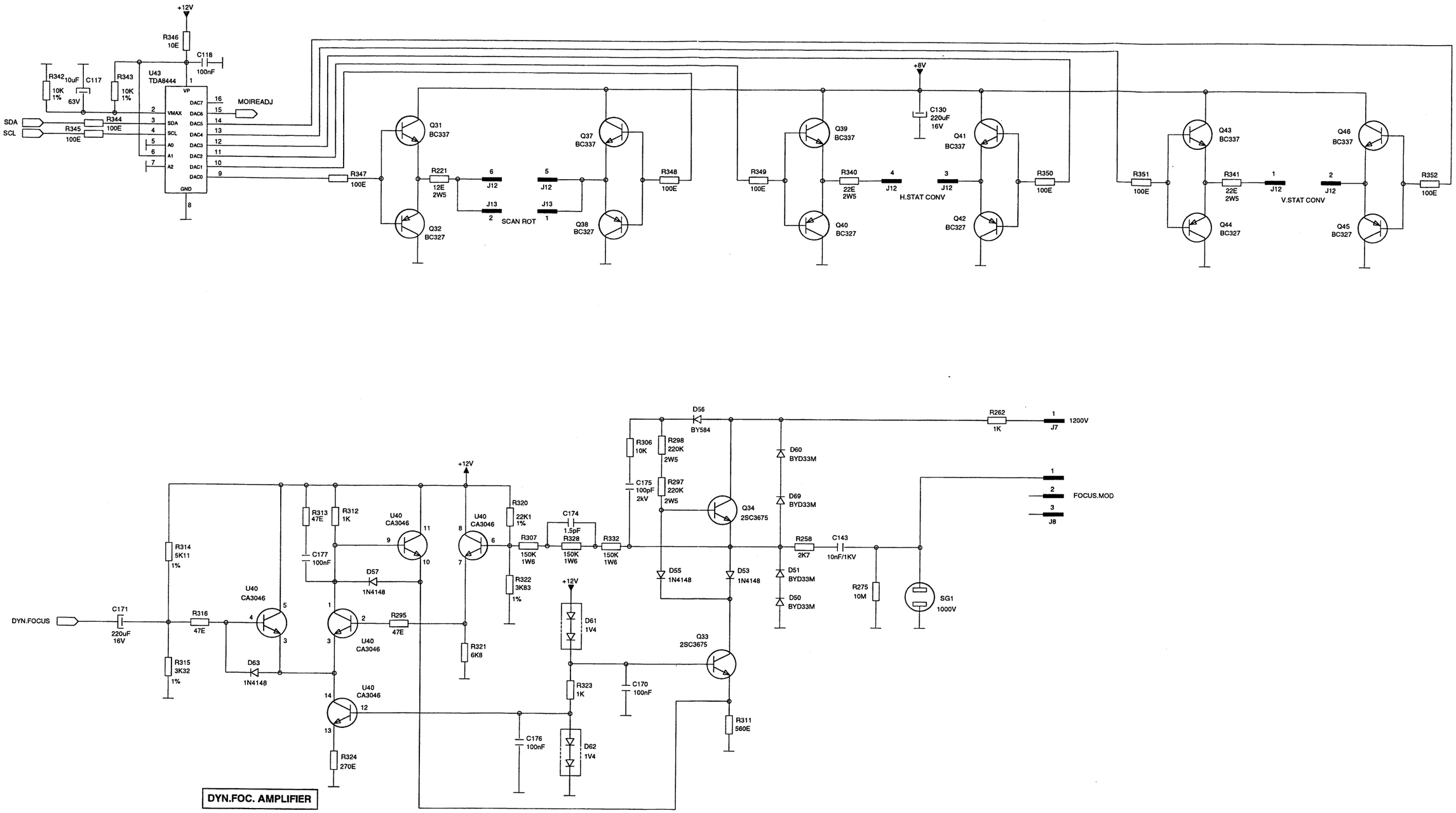
DEFLECTION BOARD	CH100
HOR. PLL & AUTOLOCK	Sheet 3/6
UNIT No : V5634419	
PCB No : V752651	Version 4
Date : 31-05-95	Drawn by : DDG-304

2.43


Bridge on deflection plug
+180V
R2 E22 FUSE
L2 80uH
C191 10uF 200V
J3
+180V*
R78 100E 1W6
C48 470pF
Q13 2SK1642
R116 1K
D30 15V
C52 1uF 50V
T4
TRFDRIV.
C19 1.2uF
R384 120K
D31 BYV27 200V
R370 E22
C15 100nF
+15V
R119 1K
D36 1N4148
Q18 BC547C
R131 1K2
R117 18E 1W6
Q17 BD238
T2
D2 BYD33J
C12 1000uF 6V
D5 BYD33J
C14 1000uF 6V
L4 AT4043 /65B
L3 AT4042 43A
R23 330E 4W
D4 BYD33J
D11 BYV27 200V
D15 BYV27 200V
P1 47E
Hor shift
H.D.H.
H.D.L.
TO HORIZONTAL DEFLECTION YOKE
L5 AT4043 /47
H-PULS*
R38 10K
C4 100nF
C13 1nF
R4 220K
R6 4K7
R21 220K
U3 LM393
R7 560K
R5 1K8
Q1 BC337
D1 BAX18
Q2 IRF9620
C3 47uF 25V
D78 BYW96E
R22 4K7
D3 SB130
R368 100E 1W6
D77 SB130
T1
R3 3K9
H-LINEAR
C8 100nF
R20 1K8
C9 10nF
C16 150nF
D25 SB130
R80 1E 2W5
R28 56E
Q7 MJH16010A
D26 SB130
R81 1E 2W5
R91 56E
Q14 MJH16010A
D501 BYW96E
D9 DD50R
D502 BYW96E
C504 4.7nF 1500V
C505 4.7nF 1500V
C500 4.7nF 1500V
C501 4.7nF 1500V
R120 2K2 2W5
D38 BYD33J
C53 2.2uF 400V
C502 120nF
C503 150nF
R180 220K
C70 150nF
Q25 IRF640
R231 33K
D83 13V
R135 220K
C64 270nF
Q22 IRF640
R226 33K
D82 13V
R181 220K
C77 560nF
Q26 IRF640
R217 33K
D81 13V
R159 220K
C75 560nF
C76 560nF
Q23 IRF640
R369 470E
C188 330nF
R372 4K7
C195 10nF
D85 13V
R222 33K
R178 220K
C85 100nF
Q24 IRF640
R238 33K
D84 13V
C55 47uF 25V
C63 1.5nF
R132 180E
U19 4013B
C96 100nF
HOR.OSC
TP8
U16 4049B
C84 150nF
R171 1K
Q21 IRF510
C83 47uF 25V
L7 150uH
-15V
C74 1uF 50V
R156 22E
R175 680E
HOR.OSC.
C69 22uF 25V
Q19 BC337
Q20 BC327
R157 22E
C82 100nF
R176 1K
C91 1nF
R177 5K6
U21 LM311
R203 4K7
C106 100nF
D44 1N4148
R202 100K
C105 1nF
U19 4013B
R205 12K
R206 2K2
C107 3.3nF
R204 12K
Q29 BF370
Q30 BF324
R133 100K
R134 100K
D37 BY584
R93 3K9
C65 100pF 2kV
C123 4.7nF
R230 1K
R229 1K
C124 4.7nF
C122 150nF
U26 TL072
R254 10K
R210 27E
R211 27E
H.SAWT
D45 BAT41
D46 BAT41
R234 10K
R235 10K
R213 10K
C125 33nF
C126 33nF
C113 100nF
U26 TL072
R212 10K
H.FLYBACK
C167 100nF
U38 PCF 8574
D73 1N4148
D72 1N4148
D70 1N4148
D71 1N4148
R327 100E
R325 100E
SDA
SCL
UNLOCK
U32 LS07
R257 390E
R279 390E
D52 BAT86
D49 1N4148
R251 1K5
LOCK
R272 3K3
R261 1K5
R266 820K
U37
C151 100nF
R301 10K
R335 100K
R331 15K
U37 LM393
VERSCAN.F.
H.SCAN.F
TP14
V.SCAN.F
TP15
R296 5K6
D59 1N4148
D58 1N4148
R309 3K3
R317 10K
R318 10K
R339 100E
Q36 BC547C
NEHTEN
EW-REF
C500, C501, C502
C503, C504, C505
D501 and D502 are
mounted on a
subunit V752385
PRODUCT SAFETY NOTICE
COMPONENTS MARKED WITH ⚠ OR ★ HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY BEFORE REPLACING ANY OF THESE COMPONENTS, READ CAREFULLY THE SERVICE SAFETY PRECAUTIONS.
DONT'T DEGRADE THE SAFETY OF THIS SET THROUGH IMPROPER SERVICING.
DEFLECTION BOARD CH100
HOR. DEFLECTION
Sheet 4/6
UNIT No : V5634419
PCB No : V752651
Version 4
Date : 31-05-95
Drawn by : DDG-304
2.44



PRODUCT SAFETY NOTICE

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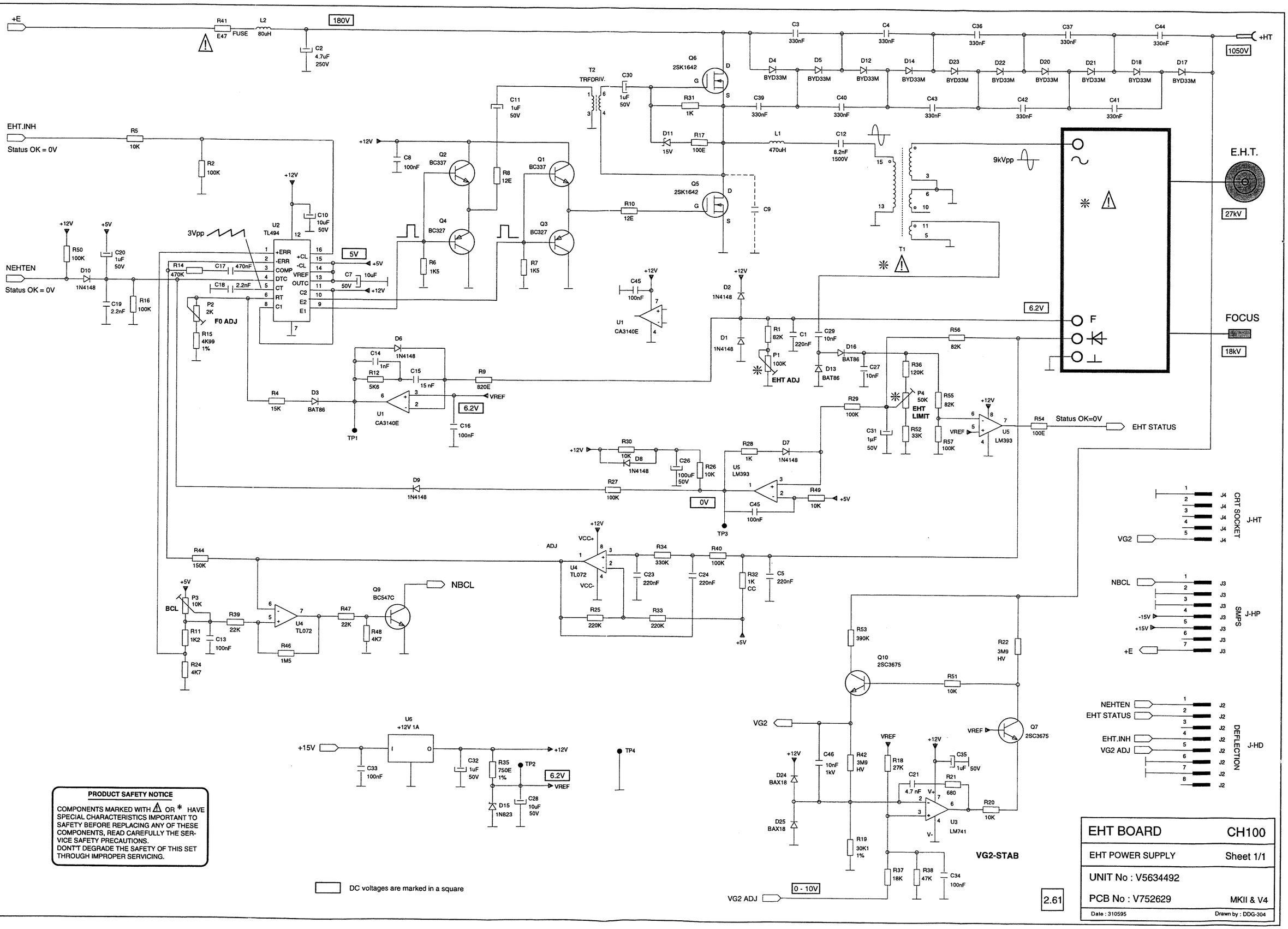
2.45

DEFLECTION BOARD CH100	
DYN. FOCUS & CONVERGENCE	
UNIT No : V5634419	Sheet 5/6
PCB No : V752651	Version 4
Date : 31-05-95	Drawn by : DDG-304


+E
R41
E47
FUSE
L2
80uH
180V
C2
4.7uF
250V
C3
330nF
C4
330nF
C36
330nF
C37
330nF
C44
330nF
+HT
1050V
D4
BYD33M
D5
BYD33M
D12
BYD33M
D14
BYD33M
D23
BYD33M
D22
BYD33M
D20
BYD33M
D21
BYD33M
D18
BYD33M
D17
BYD33M
T2
TRFDRIV.
C30
1uF
50V
C11
1uF
50V
Q6
2SK1642
R31
1K
C39
330nF
C40
330nF
C43
330nF
C42
330nF
C41
330nF
D11
15V
R17
100E
L1
470uH
C12
8.2nF
1500V
9kVpp
E.H.T.
27kV
EHT.INH
Status OK = 0V
R5
10K
R2
100K
+12V
C8
100nF
Q2
BC337
Q1
BC337
R8
12E
Q5
2SK1642
C9
R10
12E
Q4
BC327
Q3
BC327
R6
1K5
R7
1K5
T1
+5V
C10
10uF
50V
U2
TL494
3Vpp
5V
NEHTEN
Status OK = 0V
R50
100K
D10
1N4148
C20
1uF
50V
C19
2.2nF
R16
100K
R14
470K
C17
470nF
C18
2.2nF
C7
10uF
50V
P2
2K
F0 ADJ
R15
4K99
1%
U1
CA3140E
C45
100nF
D2
1N4148
D1
1N4148
R1
82K
C1
220nF
P1
100K
EHT ADJ
C29
10nF
D16
BAT86
D13
BAT86
C27
10nF
R56
82K
6.2V
F
FOCUS
18kV
D6
1N4148
C14
1nF
R12
5K6
C15
15 nF
R9
820E
R4
15K
D3
BAT86
VREF
U1
CA3140E
6.2V
C16
100nF
TP1
R29
100K
R36
120K
P4
50K
EHT
LIMIT
R55
82K
R52
33K
R57
100K
C31
1µF
50V
U5
LM393
R54
100E
Status OK=0V
EHT STATUS
R30
10K
D8
1N4148
C26
100uF
50V
R26
10K
R28
1K
D7
1N4148
U5
LM393
R27
100K
D9
1N4148
0V
R49
10K
+5V
C45
100nF
TP3
CRT SOCKET
J-HT
VG2
J4
NBCL
SMPS
J-HP
-15V
+15V
+E
J3
NEHTEN
EHT STATUS
EHT.INH
VG2 ADJ
DEFLECTION
J-HD
J2
R44
150K
ADJ
U4
TL072
VCC+
VCC-
R34
330K
R40
100K
R32
1K
CC
C5
220nF
C23
220nF
C24
220nF
R25
220K
R33
220K
BCL
P3
10K
R11
1K2
C13
100nF
R24
4K7
R39
22K
R46
1M5
R47
22K
R48
4K7
Q9
BC547C
NBCL
R53
390K
Q10
2SC3675
R22
3M9
HV
R51
10K
VG2
VREF
Q7
2SC3675
C46
10nF
1kV
R42
3M9
HV
R18
27K
C35
1uF
50V
C21
4.7 nF
R21
680
R20
10K
U3
LM741
D24
BAX18
D25
BAX18
R19
30K1
1%
VG2-STAB
R37
18K
R38
47K
C34
100nF
VG2 ADJ
0 - 10V
U6
+12V 1A
+15V
C33
100nF
C32
1uF
50V
R35
750E
1%
TP2
6.2V
VREF
D15
1N823
C28
10uF
50V
TP4
PRODUCT SAFETY NOTICE
COMPONENTS MARKED WITH ⚠ OR * HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY BEFORE REPLACING ANY OF THESE COMPONENTS, READ CAREFULLY THE SERVICE SAFETY PRECAUTIONS.
DONT'T DEGRADE THE SAFETY OF THIS SET THROUGH IMPROPER SERVICING.
DC voltages are marked in a square
EHT BOARD
CH100
EHT POWER SUPPLY
Sheet 1/1
UNIT No : V5634492
PCB No : V752629
MKII & V4
Date : 310595
Drawn by : DDG-304
2.61

TO SM

J-DP
J1

1	-15V
2	-15V
3	+8V
4	
5	
6	L1 80uH → +15V
7	
8	
9	
10	+180V

TO BACKBOARD

J-DBa
J5

1	BOW
2	SKEW
3	H-PHASE
4	H-AMPL
5	V-STAT
6	HBLR
7	HBLL
8	VBLADJ
9	HTRAP
10	VSHIFT
11	HPAR
12	VAMPL
13	H-LINEAR
14	

TO CONV

J-DR
J9

1	SDA
2	SCL
3	3WENABLE
4	
5	
6	
7	H.SAWT
8	H.FLYBACK
9	V.BL.1
10	H.BL.1
11	V.SAWT

TO EHT

J-DH
J10

1	NEHTEN
2	EHT.STATUS
3	
4	EHT.INH
5	VG2ADJ
6	
7	
8	

TO BACKBOARD

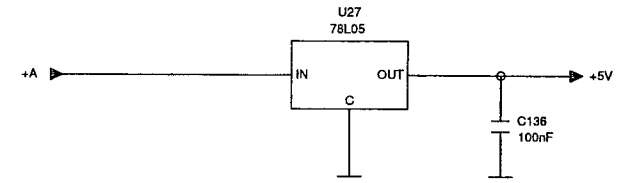
J-DBb
J11

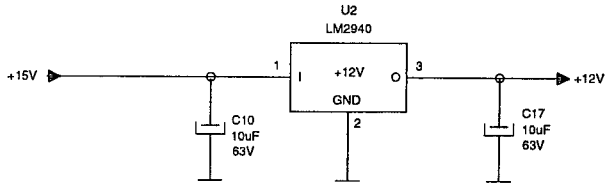
1	VG2ADJ
2	H-STAT
3	
4	3WENABLE
5	SDA
6	SCL

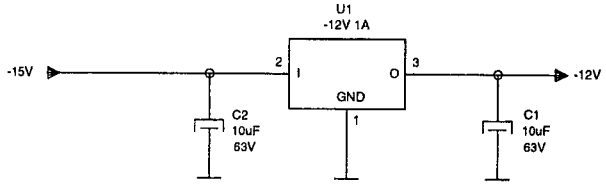
TO RGB

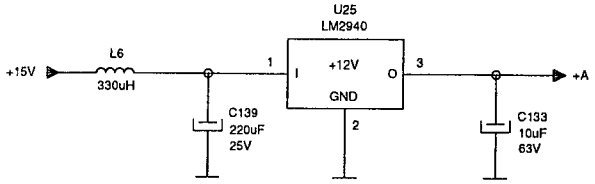
J-DA
J4

1	EHT.STATUS
2	S.AKBBL
3	AKBSTART
4	V.BL.2
5	H.FLYB2
6	H.BL.2
7	H/C.SYNC
8	
9	V.SYNC

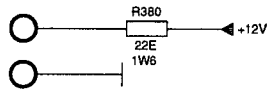


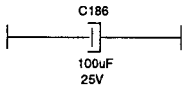


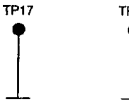




TO FAN







PRODUCT SAFETY NOTICE

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DEFLECTION BOARD CH100	
POWER & CONNECTIONS	Sheet 6/6
UNIT No : V5634419	
PCB No : V752651	Version 4
Date : 31-05-95	Drawn by : DDG-304

2.46 | 2.47

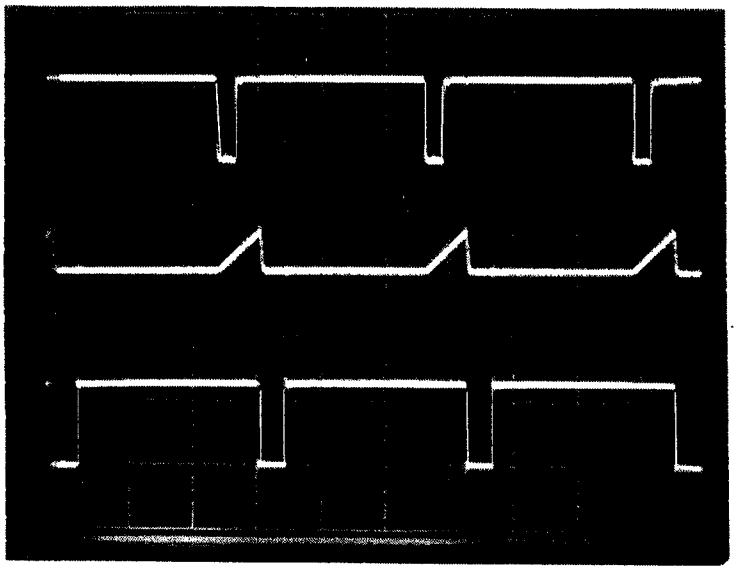


Photo 1

U30 pin 5; H/C sync : 10V/div.

Voltage over C148 : 10V/div.

U30 pin 9; sync out : 10V/div.

Time base : 5µsec/div.

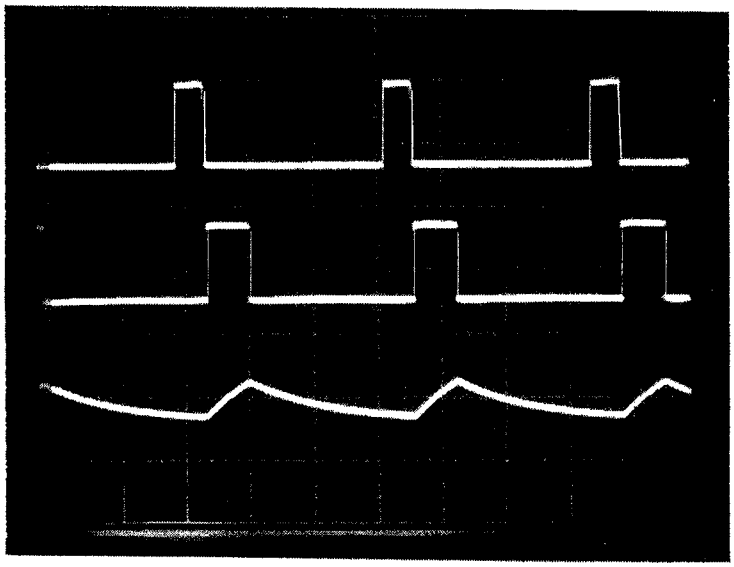


Photo 2

U22 pin 11; Hor Flyb : 10V/div.

U22 pin 10 : 10V/div.

U35 pin 4

Time base : 5µsec/div.
Signal: 61.24 kHz/72 Hz

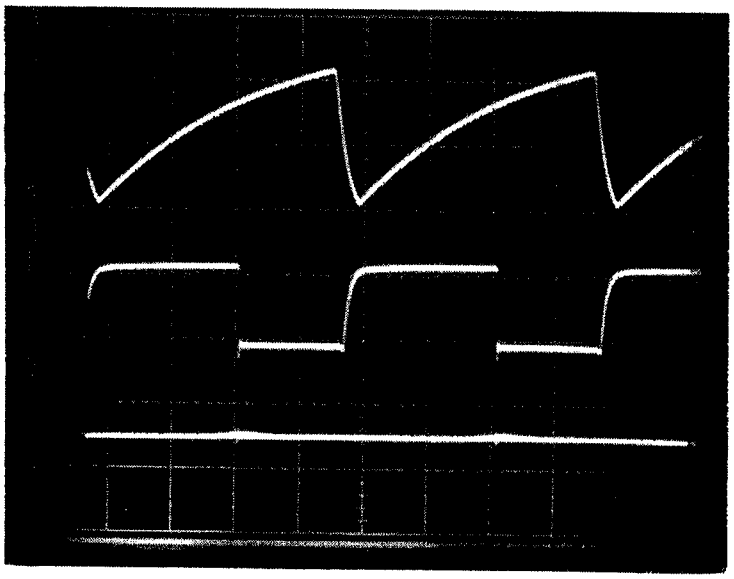


Photo 3

U35 pin 7 : 2V/div.

U35 pin 1 : 10V/div.

U35 pin 5 : 10V/div.

Time base : 2µsec/div.
Signal: 61.24 kHz/72 Hz

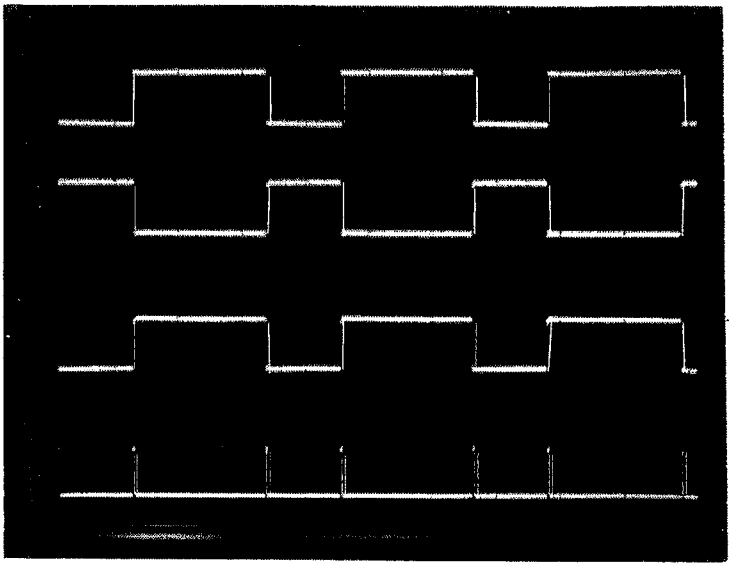


Photo 4

U41 pin 6

U41 pin 9

U41 pin 10

U42 pin 4

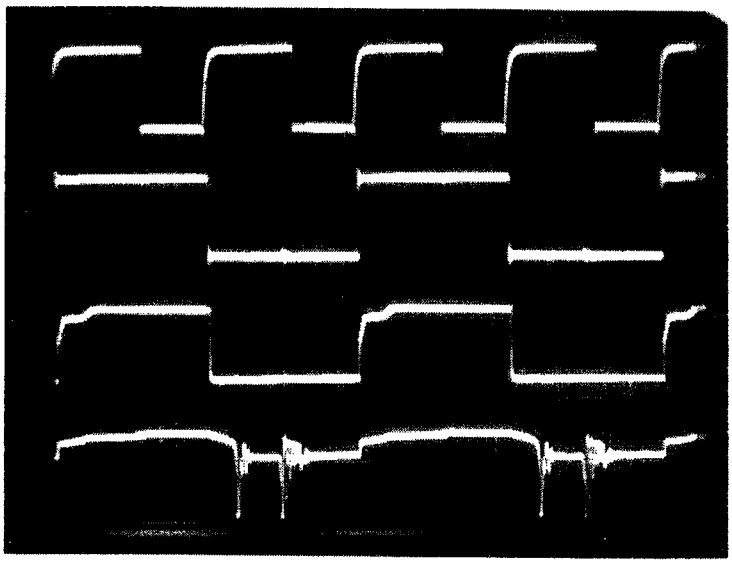


Photo 5

U19 pin 3 : 10V/div.

U19 pin 2 : 10V/div.

Q21 drain : 50V/div.

Q14 base : 10V/div.

Signal: 61.24 kHz/72 Hz

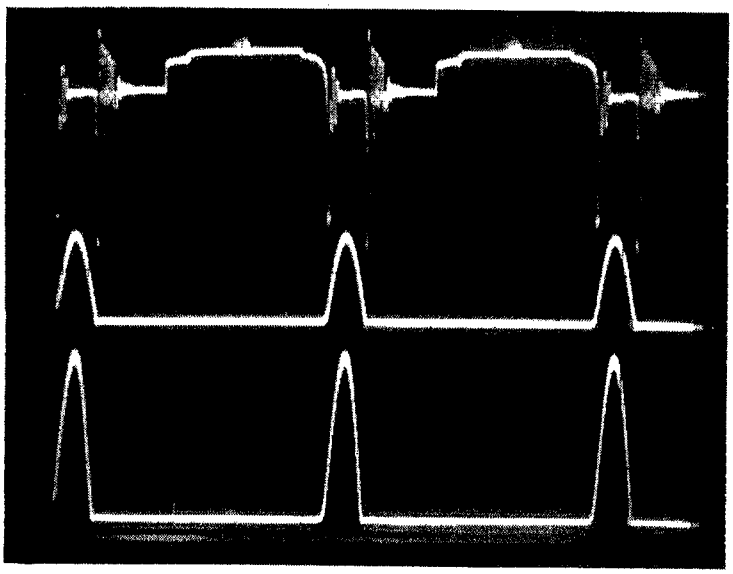


Photo 6

Q14 base

Q14 collector : 500V/div.

Q7 collector : 500V/div.

Signal: 61.24 kHz/72 Hz

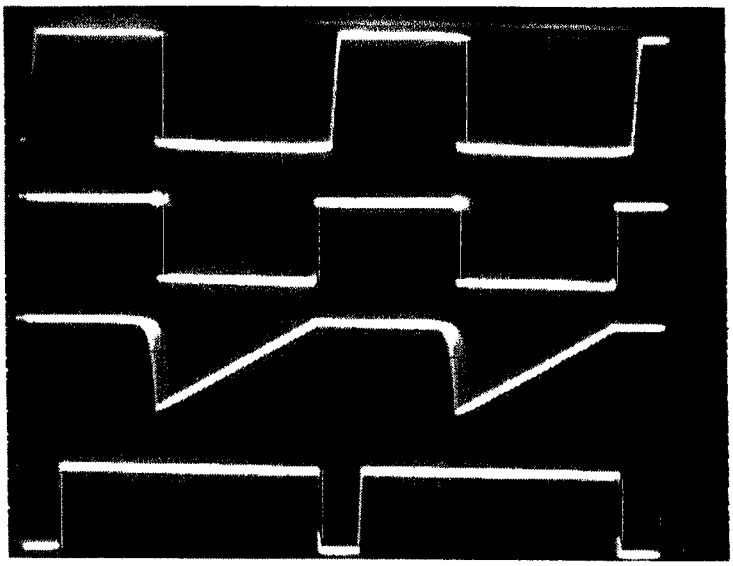


Photo 7

Hor. flyback : 10V/div.

U21 pin 2 : 5V/div.

U16 pin 2 : 10V/div.

T2 pin 14 : 100V/div.

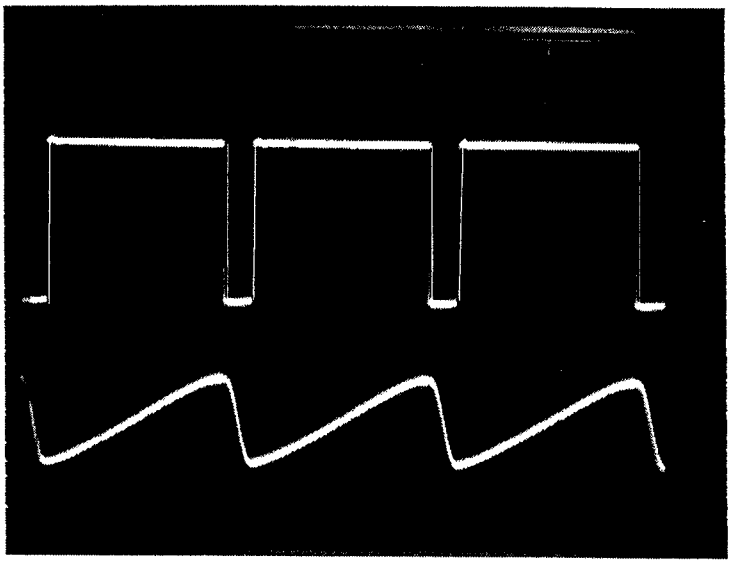


Photo 8

D45 kathode : 5V/div.

Hor. flyback : 5V/div.

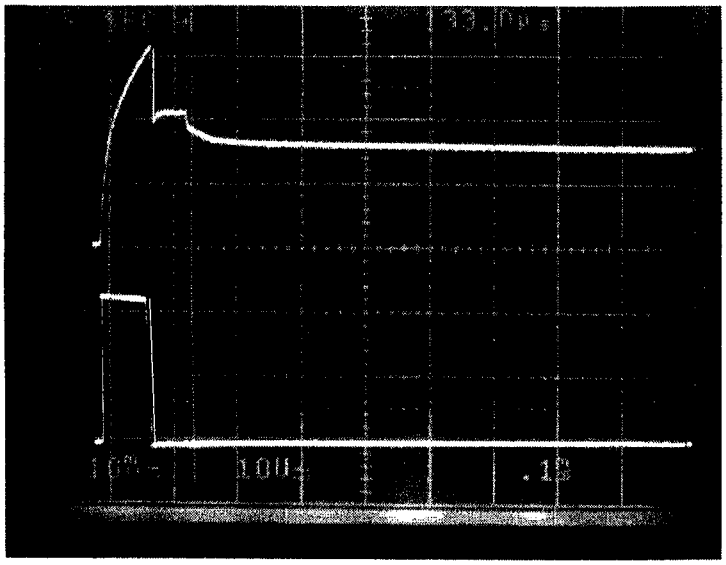


Photo 4

Vertical flyback and AKB REM correct adjusted

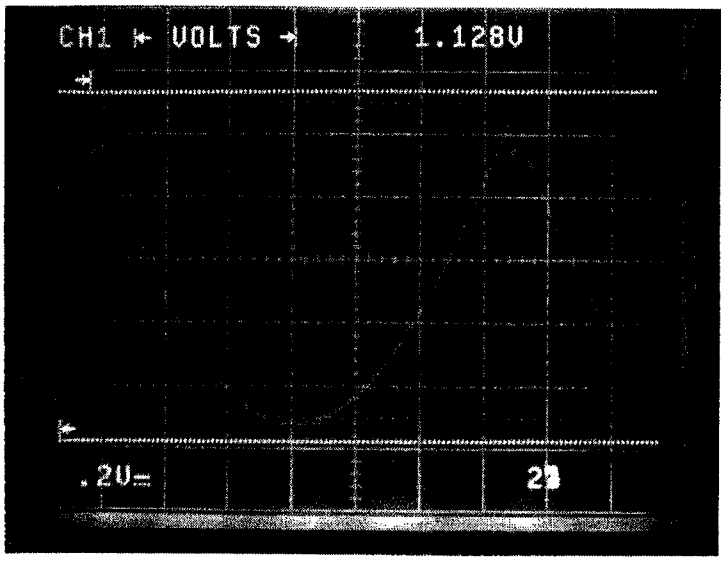


Photo 5

Vertical parabola for dynamic focus correction node C121 - P7

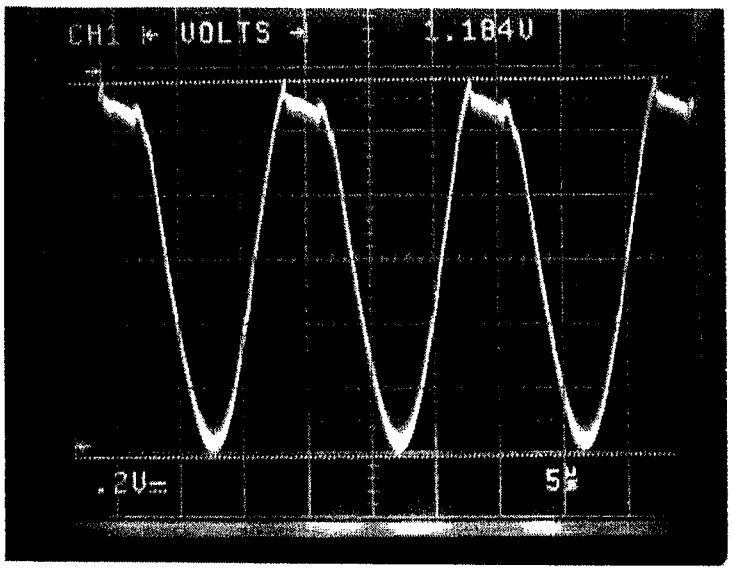


Photo 6

Horizontal parabola for dynamic focus correction node C140 - P8

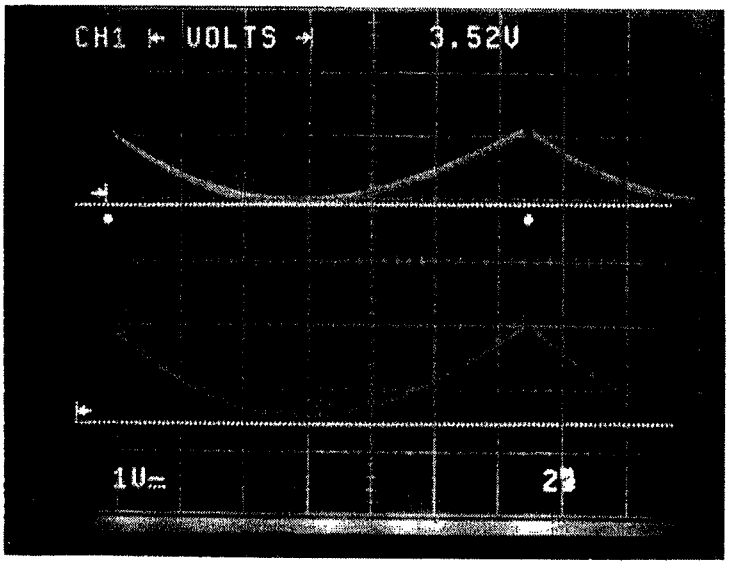


Photo 7

Dynamic focus modulation
Pin 1 of J8 (shadow mask)

Probe 100/1

Vertical : ±140Vpp adjusted by P7

Horizontal : ±350Vpp adjusted by P8

PARTS LIST OF THE DEFLECTION BOARD

Order number of a complete board: V5634419 (Index: 04)

Order number	Description	Item
C1011917	R CFFH E22K 0W35	00 R2 ,R370,R8 ,R9
V101207	R MF H 3E9 J 0W5 E4	00 R15
V101221	R MF H 56E J 0W5 E4	00 R28 ,R91
V101229	R MF H270E J 0W5 E4	00 R10 ,R12 ,R324,R75
V101234	R MF H680E J 0W5 E4	00 R175,R260
C1012389	R CFFH 1K5 J 0W5	00 R1
V101239	R MF H 1K8 J 0W5 E4	00 R118,R20 ,R24 ,R44 ,R45 ,R47 , R5
V101240	R MF H 2K2 J 0W5 E4	00 R102,R206,R246,R280,R281,R287, R71 ,R76 ,R89
V101241	R MF H 2K7 J 0W5 E4	00 R106,R288,R74
V101257	R MF H 56K J 0W5 E4	00 R284
V101261	R MF H120K J 0W5 E4	00 R384,R66
V101271	R MF H820K J 0W5 E4	00 R265,R266,R387
V102041	R CC H 2K7 K 0W5	00 R258
V102300	R MF H 1E J 3W E10	00 R80 ,R81
V102313	R MF H 12E J 3W E10	00 R221
V102316	R MF H 22E J 3W E10	00 R340,R341
V102328	R MF H220E J 3W E10	00 R25
V102340	R MF H 2K2 J 3W E10	00 R120
V102364	R MF H220K J 3W E10	00 R297,R298
V1026003	R MF H 1E F 0W6 E4	00 R52 ,R53 ,R54 ,R55
V1026004	R MF H 10E F 0W6 E4	00 R346,R65
V1026005	R MF H100E F 0W6 E4	00 R121,R136,R170,R172,R190,R196, R197,R201,R218,R219,R223,R252, R325,R327,R339,R344,R345,R347, R348,R349,R35 ,R350,R351,R352, R374,R94 ,R95 ,R96 ,R97
V1026006	R MF H 1K F 0W6 E4	00 R116,R119,R122,R166,R168,R171, R176,R185,R209,R220,R229,R230, R240,R262,R29 ,R31 ,R312,R32 , R323,R39 ,R51 ,R68 ,R83 ,R88
V1026007	R MF H 10K F 0W6 E4	00 R100,R109,R111,R124,R125,R127, R137,R138,R139,R140,R142,R144, R151,R152,R161,R162,R17 ,R18 , R212,R213,R234,R235,R237,R241, R242,R245,R249,R250,R254,R255, R27 ,R273,R299,R301,R306,R317, R318,R326,R336,R34 ,R342,R343, R38 ,R385,R64 ,R72 ,R77
V1026008	R MF H100K F 0W6 E4	00 R133,R134,R202,R228,R285,R334, R335,R337,R386,R59 ,R67 ,R82 , R84 ,R85
V1026046	R MF H 1K1 F 0W6 E4	00 R366
V1026047	R MF H 11K F 0W6 E4	00 R283,R371,R58
V1026083	R MF H 1E21F 0W6 E4	00 R30
V1026086	R MF H 1K21F 0W6 E4	00 R131
V1026087	R MF H 12K1 F 0W6 E4	00 R155,R182,R204,R205,R207,R216, R367,R73
V1026147	R MF H 14K F 0W6 E4	00 R270
V1026175	R MF H150E F 0W6 E4	00 R269
V1026176	R MF H 1K5 F 0W6 E4	00 R244,R251,R261,R289

Order number	Description		Item
V1026177	R MF H 15K F 0W6	E4	00 R278,R331,R69 ,R86
V1026178	R MF H150K F 0W6	E4	00 R174,R215,R224,R227,R56 ,R60
V1026255	R MF H182E F 0W6	E4	00 R132
V1026327	R MF H 21K5 F 0W6	E4	00 R62
V1026334	R MF H 22E1 F 0W6	E4	00 R130,R147,R156,R157
V1026336	R MF H 2K21F 0W6	E4	00 R365
V1026337	R MF H 22K1 F 0W6	E4	00 R101,R104,R129,R173,R208,R232, R320,R41 ,R48 ,R50 ,R99
V1026338	R MF H221K F 0W6	E4	00 R135,R159,R178,R180,R181,R21 , R300,R303,R4
V1026423	R MF H 2E74F 0W6	E4	00 R40
V1026424	R MF H 27E4 F 0W6	E4	00 R210,R211
V1026426	R MF H 2K74F 0W6	E4	00 R243,R304
V1026427	R MF H 27K4 F 0W6	E4	00 R167,R169,R233
V1026428	R MF H274K F 0W6	E4	00 R112,R263,R268
V1026506	R MF H 3K32F 0W6	E4	00 R115,R141,R148,R149,R189,R193, R26 ,R272,R309,R315,R33 ,R338, R42 ,R43
V1026507	R MF H 33K2 F 0W6	E4	00 R123,R126,R217,R222,R226,R231, R238
V1026509	R MF H 3M32F 0W6	E4	00 R271,R37
V1026566	R MF H 3K83F 0W6	E4	00 R322
V1026575	R MF H392E F 0W6	E4	00 R257,R279
V1026576	R MF H 3K92F 0W6	E4	00 R256,R282,R3 ,R93
V1026577	R MF H 39K2 F 0W6	E4	00 R103,R225,R274
V1026654	R MF H 47E5 F 0W6	E4	00 R295,R316
V1026655	R MF H475E F 0W6	E4	00 R143,R146,R150,R239,R247,R264, R369
V1026656	R MF H 4K75F 0W6	E4	00 R105,R110,R128,R154,R179,R183, R187,R192,R194,R200,R203,R22 , R236,R330,R333,R372,R57 ,R6 , R92 ,R98
V1026657	R MF H 47K5 F 0W6	E4	00 R113,R158,R163,R164,R19 ,R199, R214,R310,R388
V1026658	R MF H475K F 0W6	E4	00 R46
V1026686	R MF H 5K11F 0W6	E4	00 R314
V1026725	R MF H562E F 0W6	E4	00 R311
V1026726	R MF H 5K62F 0W6	E4	00 R11 ,R13 ,R177,R296,R90
V1026727	R MF H 56K2 F 0W6	E4	00 R198
V1026728	R MF H562K F 0W6	E4	00 R7
V1026806	R MF H 6K81F 0W6	E4	00 R114,R253,R286,R321,R36 ,R49 , R70 ,R87
V1026807	R MF H 68K1 F 0W6	E4	00 R63
V1026808	R MF H681K F 0W6	E4	00 R248
V1026846	R MF H 7K5 F 0W6	E4	00 R308,R329
V1026884	R MF H 82E5 F 0W6	E4	00 R145,R153,R184,R191
V1026886	R MF H 8K25F 0W6	E4	00 R160,R165,R188,R195,R259,R305
V1026887	R MF H 82K5 F 0W6	E4	00 R61
V102909	R MF H 5E6 J 2W	E7	00 R16
V102915	R MF H 18E J 2W	E7	00 R117
V102924	R MF H100E J 2W	E7	00 R368,R78
V102962	R MF H150K J 2W	E7	00 R307,R328,R332
V103330	R MO H330E J 4W		00 R23
V104678	R HV H 10M J 0W5	3500	00 R275
V1061041	R TCA H 1K M 0W1	R10NC	00 P7 ,P8

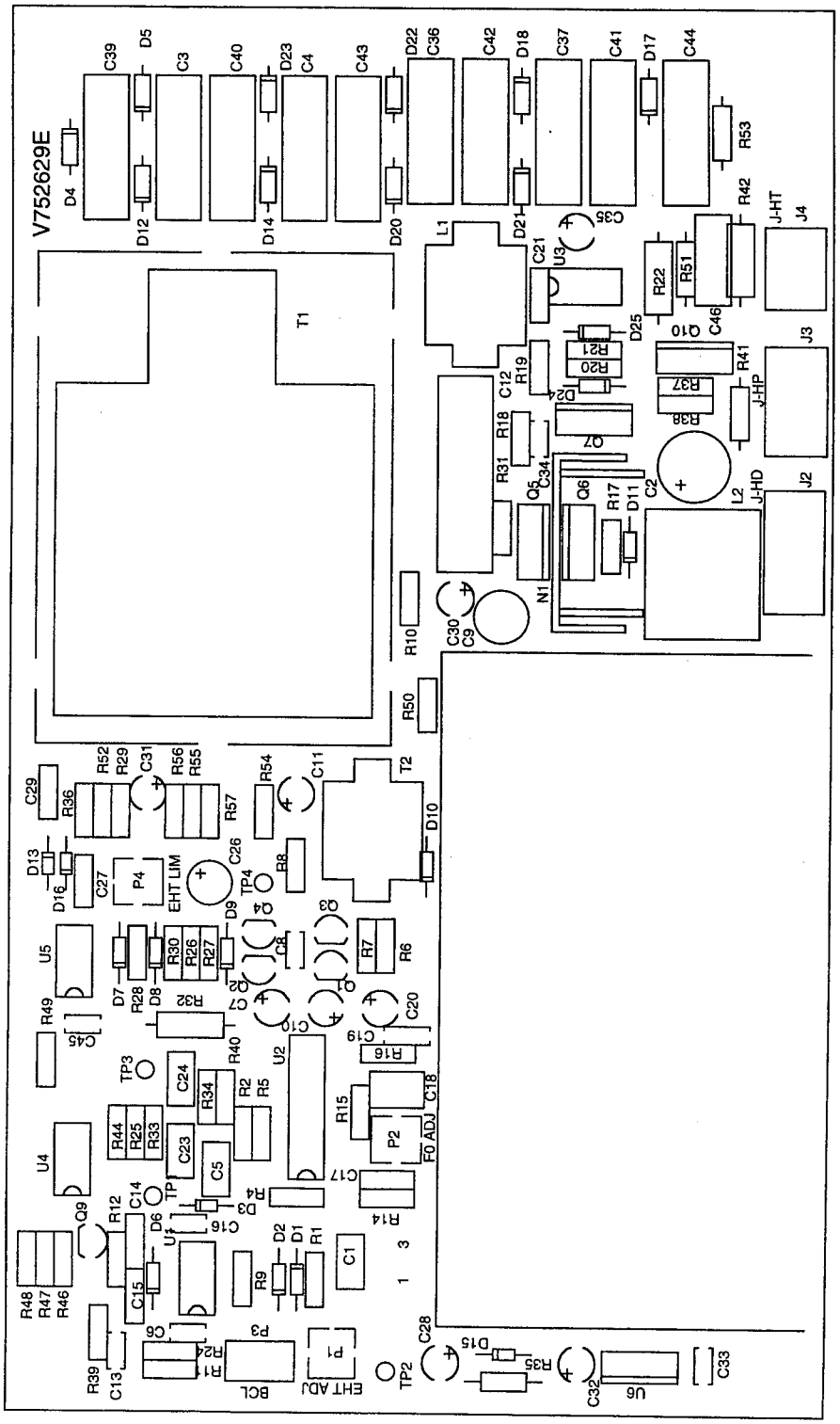
Order number	Description	Item
V1061051	R TCA H 2K2 M 0W1 R10NC 00	P3 ,P4 ,P5
V1061071	R TCA H 10K M 0W1 R10NC 00	P2 ,P9
V1065091	R TWW H 47E K 3W D20NC 00	P1
V1114005	C EL RA 47M M200E3 105 00	C7
V1114165	C EL RA 10M M200E2 105 00	C191
C111467	C EL RA 220M M 16E2 105 00	C130,C171
V111475	C EL RA 2M2M400E2 105 00	C53
V111478	C EL RA 220M M 25E2 105 00	C121,C139,C153
V1114799	C EL RA 470M M 25E2 105 00	C11 ,C18
V1114879	C EL RA 100M M 35E2 105 00	C186,C27 ,C31
V111497	C EL RA 100M M 63E2 105 00	C55
V1115109	C EL RA 22M M 25E2 105 00	C68 ,C69
V1115119	C EL RA 47M M 25E2 105 00	C111,C134,C3 ,C59 ,C60 ,C61 , C83 ,C87
V1115319	C EL RA 10M M 50E2 105 00	C1 ,C10 ,C104,C115,C117,C119, C133,C162,C17 ,C2 ,C62 ,C89
V1115469	C EL RA 1M M 50E2 105 00	C154,C163,C165,C41 ,C52 ,C74 , C81 ,C94 ,C97
V111679	C EL BRA 10M M 25E2 85 00	C112,C33 ,C37 ,C40
V111681	C EL BRA 22M M 25E2 85 00	C93 ,C98
V1117581	C CE DI 10N M102E3 HV 00	C143
V1120725	C NP0 MI 1P5C500E2 00	C174
V1120902	C CE DI 100P K202E3 HV 00	C175,C65
V112230	C NP0 MI 10P G100E2 00	C159
V112231	C NP0 MI 12P G100E2 00	C26
V112232	C NP0 MI 15P G100E2 00	C101,C80
V112242	C NP0 MI 100P G100E2 00	C178,C25 ,C50
V112362	C N750MI 100P G100E2 00	C197
V112368	C N750MI 330P G100E2 00	C194
V112735	C CE MI 470P K100E2 00	C179,C46 ,C72 ,C99
C112743	C CE MI 2N2K100E2 00	C47
V1127510	C X7R MU 10N K 50E2 125 00	C185
V112754	C CE MI 1N Z 50E2 00	C196
C112763	C CE MI 10N Z 50E2 00	C35 ,C36 ,C58
V1127830	C X7R MU 100N K 50E2 125 00	C100,C102,C106,C108,C109,C110, C113,C116,C118,C120,C135,C136, C138,C141,C147,C151,C155,C166, C167,C168,C169,C170,C176,C20 , C24 ,C29 ,C30 ,C34 ,C42 ,C44 , C49 ,C54 ,C56 ,C57 ,C66 ,C73 , C78 ,C79 ,C82 ,C86 ,C90 ,C95 , C96
V1127890	C X7R MU 470N K 50E2 125 00	C157
V112817	C CE DI 220P M400E2 00	C21 ,C5
V1129121	C COG MU 1N F 50E2 125 00	C172,C173
V114046	C POMERA 220N K250E6 85 00	C6
V114055	C POMERA 1M2K250E9 85 00	C19
V114080	C POMERA 10N K 63E2 85 00	C127,C160,C161,C195,C9
V114082	C POMERA 22N K 63E2 85 00	C51
V114083	C POMERA 33N K 63E2 85 00	C125,C126
V114088	C POMERA 100N K 63E2 85 00	C129,C132,C15 ,C150,C23 ,C4 , C8
V1140881	C POMERA 100N J 63E2 85 00	C39
V114089	C POMERA 150N K 63E2 85 00	C122,C16 ,C84
V114090	C POMERA 220N K 63E2 85 00	C140,C22 ,C38

Order number	Description	Item
V114091	C POMERA 330N K 63E2 85 00	C188
V114092	C POMERA 470N K 63E2 85 00	C103,C137,C88
V114098	C POMERA 2M2M 50E2 85 00	C149
V114480	C PO RA 1N M100E2 85 00	C105,C13 ,C131,C91
V114481	C PO RA 1N5M100E2 85 00	C164,C63
V114482	C PO RA 2N2M100E2 85 00	C128,C156,C32
V114483	C PO RA 3N3M100E2 85 00	C107
V1150642	C PPMERA 100N K250E6 00	C85
V1150662	C PPMERA 150N K250E6 00	C70
V1150692	C PPMERA 270N K250E9 00	C64
V1150732	C PPMERA 560N K250E9 00	C75 ,C76 ,C77
V115121	C PC RA 470P M400E4 100 00	C48
V1151522	C PP RA 180P H100E2 85 00	C92
V115153	C PP RA 220P J100E2 85 00	C114,C142
V1151532	C PP RA 220P H100E2 85 00	C148
V1151552	C PP RA 330P H100E2 85 00	C71
V1151622	C PP RA 1N5H100E2 85 00	C43
V1151632	C PP RA 2N2H100E2 85 00	C67
V1160066	C PS RA 1N15F63E2 70 00	C158
V131262	SURGE ARRESTER 1000V AX 00	SG1
V1314073	Q BC547C N SS TO92 00	Q11 ,Q15 ,Q16 ,Q18 ,Q36 ,Q9
V1314133	Q BC557C P SS TO92 00	Q10 ,Q27 ,Q28
V131426	Q BC337 N SS TO92 00	Q1 ,Q19 ,Q31 ,Q37 ,Q39 ,Q41 , Q43 ,Q46
C1314451	Q BD238 P P TO126 00	Q17
V1315041	D BAT41 SCH DO35 00	D40 ,D41 ,D45 ,D46
V1315045	D Y BAT85 030200 DO34 00	D86
V1315046	D Y BAT86 050200 DO34 00	D52
V1316211	D S 1N4148 075150 DO35 00	D12 ,D13 ,D14 ,D17 ,D18 ,D19 , D20 ,D21 ,D22 ,D23 ,D27 ,D28 , D29 ,D32 ,D33 ,D34 ,D35 ,D36 , D39 ,D44 ,D48 ,D49 ,D53 ,D54 , D55 ,D57 ,D58 ,D59 ,D63 ,D64 , D65 ,D67 ,D68 ,D7 ,D70 ,D71 , D72 ,D73 ,D79 ,D8 ,D80
V131624	D S BAX18 075400 DO35 00	D1
C131714	D STB 1V4 0W33 DO35 00	D61 ,D62
V131716	D ZEN 5V1 0W5 C DO35 00	D42
V131740	D ZEN 12V 0W5 C DO35 00	D10 ,D6
V131741	D ZEN 13V 0W5 C DO35 00	D81 ,D82 ,D83 ,D84 ,D85
V131757	D ZEN 3V9 0W5 C DO35 00	D47
V131758	D ZEN 15V 0W5 C DO35 00	D30
V131901	D DD50R SW TOP3 00	D9
V1319033	D R BYD33J 6001A3 SOD81 00	D38 ,D4
V1319035	D R BYD33M 1021A3 SOD81 00	D50 ,D51 ,D60 ,D69
C131907	D R BY584 182085 SOD61A 00	D37 ,D56
V1319141	D BYV26E AFSR SOD57 00	D78
V131930	D Y 0301A0 DO41 00	D25 ,D26 ,D77
V131954	D BYV27-200 R SOD57 00	D11 ,D15 ,D31
V132134	U 3046 CA DIP14 P 00	U40
V132194	U 072 TL DIP8 P 00	U26
V132501	Q BC327-25 P SS TO92 00	Q20 ,Q32 ,Q35 ,Q38 ,Q40 ,Q42 , Q44 ,Q45
V132507	Q BF324 P SS TO92 00	Q30
V132513	Q BF370 N SS TO92 00	Q29

Order number	Description	Item
V132516	Q BF422 N SS TO92	00 Q8
V1325171	Q BUX84F N P SOT186	00 Q5
V132552	Q BF423 P SS TO92	00 Q6
V132568	Q MJW16010A N P TO247	00 Q14 ,Q7
V132579	Q BD651 DN P TO220	00 Q4
V132588	Q 2SC3675 P P TO220	00 Q33 ,Q34
V132602	Q IRF510 FN P TO220	00 Q21
V132604	Q IRF640 FN P TO220	00 Q22 ,Q23 ,Q24 ,Q25 ,Q26
V1326101	Q 2SK1642 FN P TO220	00 Q13
V132614	Q IRF620 FN P TO220	00 Q12
V132615	Q IRF9620 FP P TO220	00 Q2
V132707	U 3080 CA DIP8 P	00 U15 ,U20 ,U23
R132909	Q BD652 DP P TO220	00 Q3
V133022	HTSN@ Q TO220	00 N2 ,N3 ,N4 ,N5
V133043	HTSN@A TO220 I_ALOX°12X18	00 0103
V133049	HTSN@A TO220 WSHR STNI	00 0256
C133054	HTSN@A SOT93 SPG	00 0102
C133055	HTSN@A SOT93 I_MICA 28X25	00 0104
V133079	HTSN@ Q TO220 17X 8 L 22	00 0190
V133089	HTSN@ Q TO220 22X 6 L 31	00 N1
V1330942	HTSN@A I_SILA 19X13	00 0250
C134016	U 7912 TO220 P	00 U1
V134018	U 431C TL TO92 P	00 D66
V134025	U 78L05AC TO92 P	00 U27
V134050	U 2940CT12LM TO220 P	00 U2 ,U25
V134106	U 319 LM DIP14 P	00 U33
V134117	U 074 TL DIP14 P	00 U24 ,U5 ,U7
V134120	U 3140 CA DIP8 P	00 U29 ,U4
V134129	U 393 LM DIP8 P	00 U11 ,U14 ,U3 ,U37
V134132	U 311 LM DIP8 P	00 U21
V134135	U 34082 MC DIP8 P	00 U39
V134142	U 3240 CA DIP8 P	00 U31 ,U36
V137259	U 8444 TDA DIP16 P	00 U43
V137295	U 8574 PCF DIP16 P	00 U38
V137302	U 4011B DIP14 P	00 U9
V137307	U 1391 CA DIP8 P	00 U35
V137310	U 1496 LM DIP14 P	00 U17 ,U18
V137324	U 4049B DIP16 P	00 U16
V137377	U 4538B DIP16 P	00 U41
V137386	U 4046B DIP16 I	00 U13
V137395	U 4098B DIP16 P	00 U12 ,U22 ,U30 ,U8
V137397	U 4013B DIP14 P	00 U10 ,U19
V137508	U 7407 DIP14 P	00 U32
C137700	U 4053B DIP16 P	00 U28 ,U42
V137728	U 4850 TDA DIP20 P	00 U6
K3060522	CH RA NS 150 UH 0A75	00 L7
V3061502	CH AX NS 330 UH	00 L6
V3062221	CH TOR V 80 UH 2A	00 L1 ,L2
V306411	CL LIN DYN 7044	00 T1
V306436	CH MNS 2.5 MH 1A	00 L4
V306726	T CURR AT4043/ 47	00 L5
V313491	J U0.3 FBT P 8 E1SN SPG	00 U35
V313495	J U0.3 FBT P16 E1SN SPG	00 U41
V313607	J MTA MBT P 3 M3.96 FL RO	00 J8
V3137812	J CT H MBT P 2 M2SN WH	00 J13

Order number	Description	Item
V3137814	J CT H MBT P 4 M2SN WH 00	J12
V3137816	J CT H MBT P 6 M2SN WH 00	J11
V3137818	J CT H MBT P 8 M2SN WH 00	J10
V3137819	J CT H MBT P 9 M2SN WH 00	J4
V3137820	J CT H MBT P10 M2SN WH 00	J1
V3137821	J CT H MBT P11 M2SN WH 00	J9
V3137824	J CT H MBT P14 M2SN WH 00	J5
V3139605	J MI MBT P 5 R3R2SN 00	J2
V3139616	J CMI MBT P 6 R4R3 SN 00	J3
K315354	J PIN PR D1.3L8.5+5 00	J7
V342159	W UL1672 AWG22 ST WH 00	0300
Z34219903	WU UL1007 AWG18 ST GY 30 00	1000
V348064	CBLA CLP D15 TWIST 00	0200
V3481014	WU JUMP 0.6 5.08 00	C12 ,C14
C348200	SLVU OIL D 1.5 L10 RED 00	R
C3482005	SLVU OIL D 1.5 L 5 RED 00	0230,1010
C3482007	SLVU OIL D 1.5 L 7.5 RED 00	0350
V361896	SCR UNC _R 6-32X 3/ 8STZN 00	0090
V362120	SCR D7985 M 3 X 4 STZN 00	0120
V362121	SCR D7985 M 3 X 6 STZN 00	0160
V362122	SCR D7985 M 3 X 8 STZN 00	0257
V366102	NUT D934 M 3 STZN 00	0258
V3661026	NUT D934 M 3 SS 00	0180
V366940	I NUT ST M3 PCB STSN 00	0130
V367376	SPR D125B D 3.2D 7 STZN 00	0255
V367378	SPR D125B D 4.3D 9 STZN 00	0101
V367454	RVT BLND_R3.2C 3.2 STAL 00	0140
V367502	SPR D6798AD 3.2D 6 STZN 00	0170
V367503	SPR D6798AD 4.3D 8 STZN 00	0100
V367650	NUT TRAD M 3 HOOK STNI 00	0110
V5634425	UN SUB DEFL V3 CICD121 00	0210
V601412	PRINT HANGER CH100 02	0050
V6014352	HTSN C CCID12X V3 00	0010
V601698	HTSN C LIN PUMP CH100 00	0220
V602950	J TESTPIN BT D 00	TP1 ,TP11,TP12,TP13,TP14,TP15, TP16,TP17,TP2 ,TP3 ,TP4 ,TP5 , TP6 ,TP7 ,TP8 ,TP9
V603569	HTSN A GEN SPG 3X 3.1 01	0030
V6035692	HTSN A GEN SPG 2X 3.1 00	0020
V603695	ISOLATION DEFLECTION 01	0040
V752651	PCB DEFL CCID121 V4 00	PCB1
V775258	T 6551 DRIV POW FET 00	T4
V775418	T CH100 DRIVER 00	T3
V775419	T CH100 HOR DEF 00	T2

EHT BOARD


V752629E
T1
T2
L1
L2
N1
U1
U2
U3
U4
U5
U6
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q9
Q10
D1
D2
D3
D4
D5
D6
D7
D8
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D25
C1
C2
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C4
C5
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C40
C41
C42
C43
C44
C45
C46
R1
R2
R3
R4
R5
R6
R7
R9
R10
R12
R14
R15
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R39
R40
R41
R42
R44
R46
R47
R48
R49
R50
R51
R52
R53
R54
R55
R56
R57
P1
P2
P3
P4
TP1
TP2
TP3
TP4
J-HT
J-HP
J-HD
J2
J3
J4
EHT LIM
EHT ADJ
BCL
F0 ADJ

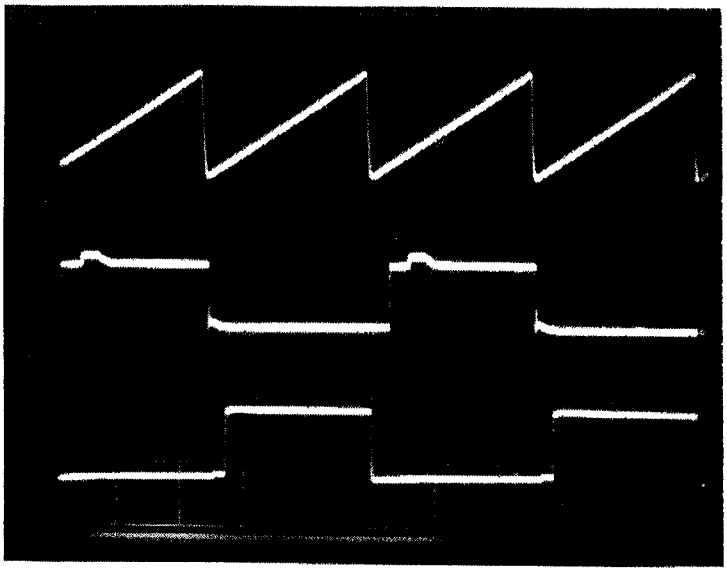


Photo 1

U2 pin 5 : 1V/div.

U2 pin 9 : 10V/div.

U2 pin 10 : 10V/div.

Time base: 5 µsec/div.

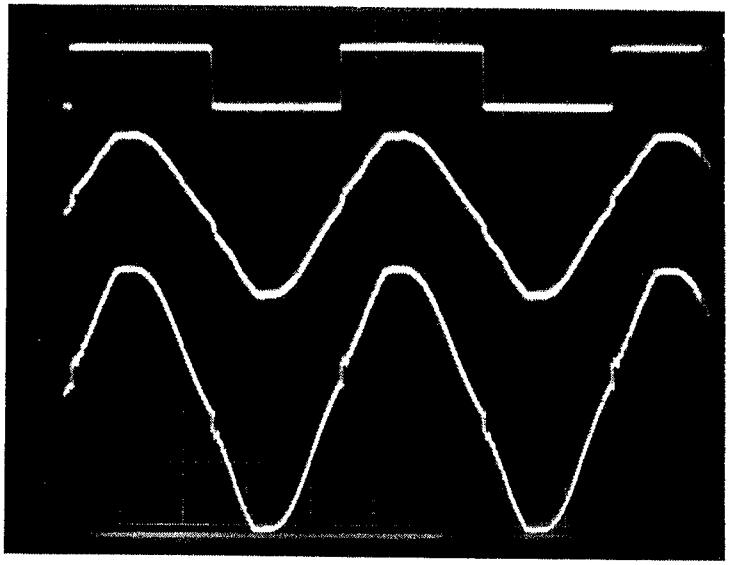


Photo 2

Q5 drain : 200V/div.

T1 pin 15 : 200V/div.

T1 pin 11 : 5V/div.

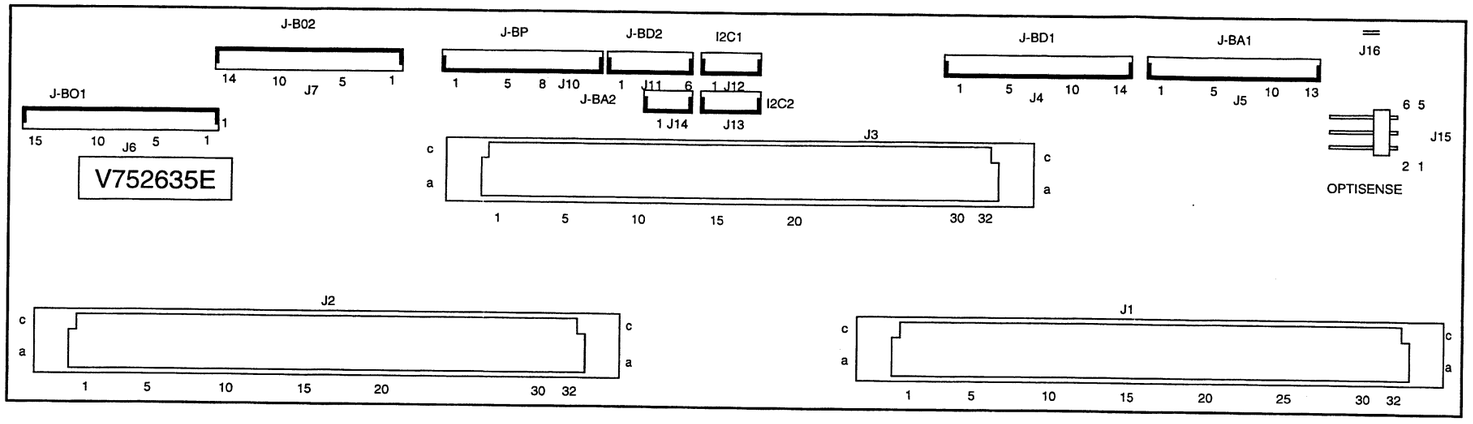
Time base: 5 µsec/div.

PARTS LIST OF THE EHT BOARD

Order number of a complete board: V5634492 (Index:06)

Order number	Description	Item
C1011947	R CFFH E47K 0W35	00 R41
V101234	R MF H680E J 0W5 E4	00 R21
V101235	R MF H820E J 0W5 E4	00 R9
V101251	R MF H 18K J 0W5 E4	00 R37
V101261	R MF H120K J 0W5 E4	00 R36
V101266	R MF H330K J 0W5 E4	00 R34
V101267	R MF H390K J 0W5 E4	00 R53
V101274	R MF H 1M5 J 0W5 E4	00 R46
V102036	R CC H 1K K 0W5	00 R32
V1026005	R MF H100E F 0W6 E4	00 R17 ,R54
V1026006	R MF H 1K F 0W6 E4	00 R28 ,R31
V1026007	R MF H 10K F 0W6 E4	00 R20 ,R26 ,R30 ,R49 ,R5 ,R51
V1026008	R MF H100K F 0W6 E4	00 R16 ,R2 ,R27 ,R29 ,R40 ,R50 , R57
V1026084	R MF H 12E1 F 0W6 E4	00 R10 ,R8
V1026086	R MF H 1K21F 0W6 E4	00 R11
V1026176	R MF H 1K5 F 0W6 E4	00 R6 ,R7
V1026177	R MF H 15K F 0W6 E4	00 R4
V1026178	R MF H150K F 0W6 E4	00 R44
V1026337	R MF H 22K1 F 0W6 E4	00 R39 ,R47
V1026338	R MF H221K F 0W6 E4	00 R25 ,R33
V1026427	R MF H 27K4 F 0W6 E4	00 R18
V1026467	R MF H 30K1 F 0W6 E4	00 R19
V1026507	R MF H 33K2 F 0W6 E4	00 R52
V1026656	R MF H 4K75F 0W6 E4	00 R24 ,R48
V1026657	R MF H 47K5 F 0W6 E4	00 R38
V1026658	R MF H475K F 0W6 E4	00 R14
V1026676	R MF H 4K99F 0W6 E4	00 R15
V1026726	R MF H 5K62F 0W6 E4	00 R12
V1026845	R MF H750E F 0W6 E4	00 R35
V1026887	R MF H 82K5 F 0W6 E4	00 R1 ,R55 ,R56
K104668	R HV H 3M9 J 0W5 3500	00 R22 ,R42
V106829	R TCE V 10K K 0W5 S10SS	00 P3
V107007	R TCE H 2K K 0W5 S 7TS	00 P2
V107012	R TCE H 50K K 0W5 S 7TS	00 P4
V107013	R TCE H100K K 0W5 S 7TS	00 P1
V1114005	C EL RA 47M M200E3 105	00 C2
V1115119	C EL RA 47M M 25E2 105	00 C26
V1115319	C EL RA 10M M 50E2 105	00 C10 ,C28 ,C7
V1115469	C EL RA 1M M 50E2 105	00 C11 ,C20 ,C30 ,C31 ,C32 ,C35
V1117581	C CE DI 10N M102E3 HV	00 C46
C112743	C CE MI 2N2K100E2	00 C19
V1127830	C X7R MU 100N K 50E2 125	00 C13 ,C16 ,C33 ,C34 ,C45 ,C6 , C8
V1127890	C X7R MU 470N K 50E2 125	00 C17
V114048	C POMERA 330N K250E6 85	00 C3 ,C36 ,C37 ,C39 ,C4 ,C40 , C41 ,C42 ,C43 ,C44
V114080	C POMERA 10N K 63E2 85	00 C27 ,C29
V114081	C POMERA 15N K 63E2 85	00 C15
V114090	C POMERA 220N K 63E2 85	00 C1 ,C23 ,C24 ,C5
V114480	C PO RA 1N M100E2 85	00 C14
V114484	C PO RA 4N7M100E2 85	00 C21

Order number	Description	Item
V115007	C PPMERA 8N2J162E9 HV 00	C12
V1151632	C PP RA 2N2H100E2 85 00	C18
V1314073	Q BC547C N SS TO92 00	Q9
V131426	Q BC337 N SS TO92 00	Q1 ,Q2
V1315046	D Y BAT86 050200 DO34 00	D13 ,D16 ,D3
V1316211	D S 1N4148 075150 DO35 00	D1 ,D10 ,D2 ,D6 ,D7 ,D8 , D9.
V131624	D S BAX18 075400 DO35 00	D24 ,D25
V1317205	D REF 6V2 0.005% DO34 00	D15
V131758	D ZEN 15V 0W5 C DO35 00	D11
V1319035	D R BYD33M 1021A3 SOD81 00	D12 ,D14 ,D17 ,D18 ,D20 ,D21 , D22 ,D23 ,D4 ,D5
V132194	U 072 TL DIP8 P 00	U4
V132501	Q BC327-25 P SS TO92 00	Q3 ,Q4
V132588	Q 2SC3675 P P TO220 00	Q10 ,Q7
V1326101	Q 2SK1642 FN P TO220 00	Q5 ,Q6
V133086	HTSN@ Q TO220 25X13 L 30 00	N1
V134050	U 2940CT12LM TO220 P 00	U6
V134104	U 741 LM DIP8 P 00	U3
V134120	U 3140 CA DIP8 P 00	U1
V134129	U 393 LM DIP8 P 00	U5
C137296	U 494 TL DIP16 P 00	U2
V3062221	CH TOR V 80 UH 2A 00	L2
V3137795	J CT H MBS P 5 M2SN WH 00	J4
V3137797	J CT H MBS P 7 M2SN WH 00	J3
V3137798	J CT H MBS P 8 M2SN WH 00	J2
V348005	GRMT CABLE BLACK 6.4 00	0051
V349663	CD HV 3K 22-SO RTV F 350 00	JHT
V361911	SCR D965 M 3 X 4 STZN 00	0210
V362120	SCR D7985 M 3 X 4 STZN 00	0212
V3621212	SCR Z7985 M 3 X 6 STZN 00	0031
V362123	SCR D7985 M 3 X 10 STZN 00	0020
V362199	SCR Z7985 M 3 X 8 STZN 00	0110
V363602	SCR D7981C 2.9X 9.5STZN 00	0030
V363608	SCR D7982C 2.9X 9.5STZN 00	0211
V366102	NUT D934 M 3 STZN 00	0021,0032
V367502	SPR D6798AD 3.2D 6 STZN 00	0022
V6014512	COVER EHT CCID12X V3 01	0200
V6014522	SHIELDING EHT CCID12X V3 01	T..1
V6014531	GROUNDPL EHT CCID12X V3 01	0100
V602950	J TESTPIN BT D 00	TP1 ,TP2 ,TP3 ,TP4
V752629	PCB UN EHT CCID12X V3 00	PCB1
V775258	T 6551 DRIV POW FET 00	T2
V775412	T EHT CCID12X 01	T1
V775427	CH EHT CCID12X EE20 470UH 02	L1
V776917	UN EHT CHASSIS 100 04	A1
K800256	SPRCL10 D 6.5D 9.75PL 00	0050


J-B02
14 10 J7 5 1
J-BP
1 5 8 J10 1
J-BD2
I2C1
J11 6 1 J12
J-BA2
I2C2
1 J14
J13
J-BD1
1 5 J4 10 14
J-BA1
1 5 J5 10 13
J16
6 5
J15
2 1
OPTISENSE
J-BO1
15 10 J6 5 1
V752635E
J3
c
a
1 5 10 15 20 30 32
J2
1 5 10 15 20 30 32
J1
1 5 10 15 20 25 30 32

To µ-processor

J1

a1	H-LINEAR
a2	AX-UNIFORM
a3	V-UNIFORM
a4	
a5	BOW
a6	SKEW
a7	H-PHASE
a8	H-AMPL
a9	V-STAT
a10	HBLR
a11	HBLL
a12	VBLADJ
a13	AKBREM
a14	VSHIFT
a15	HPAR
a16	VAMPL
a17	3WENABLE
a18	SETUPELIM
a19	PICTRED
a20	PICTGREEN
a21	PICTBLUE
a22	BACKGRRED
a23	BACKGRGREEN
a24	BACKGRBLUE
a25	LOWLRED
a26	LOWLGREEN
a27	LOWLBLUE
a28	HORFREQ
a29	VERTFREQ
a30	+12V
a31	OPTIS
a32	GNDOPTIS

J1

c1	TTL1
c2	TTL2
c3	
c4	
c5	BOW
c6	SKEW
c7	H-PHASE
c8	H-AMPL
c9	V-STAT
c10	HBLR
c11	HBLL
c12	VBLADJ
c13	AKBREM
c14	VSHIFT
c15	HPAR
c16	VAMPL
c17	3WENABLE
c18	SETUPELIM
c19	PICTRED
c20	PICTGREEN
c21	PICTBLUE
c22	BACKGRRED
c23	BACKGRGREEN
c24	BACKGRBLUE
c25	LOWLRED
c26	LOWLGREEN
c27	LOWLBLUE
c28	HORFREQ
c29	VERTFREQ
c30	+12V
c31	OPTIS
c32	-12V

To µ-processor

J2

a1	KEYSCAN(2)
a2	KEYSCAN(1)
a3	KEYSCAN(0)
a4	KEYDRVR(3)
a5	KEYDRVR(2)
a6	KEYDRVR(1)
a7	KEYDRVR(0)
a8	AUXDATIN(2)
a9	AUXDATOUT(2)
a10	ALSAN
a11	
a12	+5VLCD
a13	LCDVIEW
a14	REGSEL
a15	RWLCD
a16	ELCD
a17	D0
a18	D1
a19	D2
a20	D3
a21	D4
a22	D5
a23	D6
a24	D7
a25	LCDBACKL
a26	
a27	+15V
a28	-15V
a29	+8V
a30	SCL
a31	SDA
a32	SMPSDIAG

J2

c1	KEYSCAN(2)
c2	KEYSCAN(1)
c3	KEYSCAN(0)
c4	KEYDRVR(3)
c5	KEYDRVR(2)
c6	KEYDRVR(1)
c7	KEYDRVR(0)
c8	AUXDATIN(2)
c9	AUXDATOUT(2)
c10	ALSAN
c11	
c12	+5VLCD
c13	LCDVIEW
c14	REGSEL
c15	RWLCD
c16	ELCD
c17	D0
c18	D1
c19	D2
c20	D3
c21	D4
c22	D5
c23	D6
c24	D7
c25	LCDBACKL
c26	
c27	+15V
c28	-15V
c29	+8V
c30	DEGAUSS
c31	VG2ADJJUST
c32	H-STAT

Spare

J3

a1	
a2	+15V
a3	-15V
a4	+8V
a5	DEGAUSS
a6	V-UNIFORM
a7	AX-UNIFORM
a8	VG2ADJUST
a9	H-STAT
a10	SMPSDIAG
a11	SDA
a12	SCL
a13	+5VLCD
a14	
a15	
a16	
a17	
a18	
a19	
a20	
a21	
a22	TTL1
a23	TTL2
a24	
a25	
a26	
a27	
a28	VERTFREQ
a29	HORFREQ
a30	3WENABLE
a31	H-LINEAR
a32	

J3

c1	
c2	+15V
c3	-15V
c4	+8V
c5	DEGAUSS
c6	V-UNIFORM
c7	AX-UNIFORM
c8	VG2ADJUST
c9	H-STAT
c10	SMPSDIAG
c11	SDA
c12	SCL
c13	+5VLCD
c14	
c15	
c16	
c17	
c18	
c19	
c20	
c21	
c22	TTL1
c23	TTL2
c24	
c25	
c26	
c27	
c28	VERTFREQ
c29	HORFREQ
c30	3WENABLE
c31	H-LINEAR
c32	

To deflection

J4 J-BD1

1	BOW
2	SKEW
3	H-PHASE
4	H-AMPL
5	V-STAT
6	HBLR
7	HBLL
8	VBLADJ
9	AKBREM
10	VSHIFT
11	HPAR
12	VAMPL
13	H-LINEAR
14	

To RGB

J5 J-BA1

1	SETUPELIM
2	PICTRED
3	PICTGREEN
4	PICTBLUE
5	BACKGRRED
6	BACKGRGREEN
7	BACKGRBLUE
8	LOWLRED
9	LOWLGREEN
10	LOWLBLUE
11	HORFREQ
12	VERTFREQ
13	

To control unit

J6 J-B01

15	AUXDATOUT(2)
14	AUXDATIN(2)
13	+12V
12	
11	KEYSCAN(2)
10	KEYSCAN(1)
9	KEYSCAN(0)
8	KEYDRVR(3)
7	KEYDRVR(2)
6	KEYDRVR(1)
5	KEYDRVR(0)
4	
3	+5VLCD
2	ALSAN
1	LCDBACKL

To control unit

J7 J-B02

14	
13	+5VLCD
12	LCDVIEW
11	REGSEL
10	RWLCD
9	ELCD
8	D0
7	D1
6	D2
5	D3
4	D4
3	D5
2	D6
1	D7

To optisense

J15

1	OPTIS
2	+12V
3	
4	
5	-12V
6	GNDOPTIS

J16

1	

To SMPS

J10 J-BP

1	-15V
2	
3	
4	+8V
5	+8V
6	SMPSDIAG
7	+15V
8	DEGAUSS
9	
10	
11	V-UNIFORM
12	AX-UNIFORM

To deflection

J11 J-BD2

1	VG2ADJUST
2	H-STAT
3	
4	3WENABLE
5	SDA
6	SCL

To RGB

J14 J-BA2

1	
2	SDA
3	SCL

Spare

J13 I2C2

1	
2	SDA
3	SCL
4	+5VLCD

Spare

J12 I2C1

1	
2	SDA
3	SCL
4	+5VLCD

PRODUCT SAFETY NOTICE

COMPONENTS MARKED WITH ⚠ OR ★ HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY BEFORE REPLACING ANY OF THESE COMPONENTS, READ CAREFULLY THE SERVICE SAFETY PRECAUTIONS.
DONT'T DEGRADE THE SAFETY OF THIS SET THROUGH IMPROPER SERVICING.

2.66

BACKBOARD	CH100
	Sheet 1/1
UNIT No : V5634471	
PCB No : V752635	MKII & V4
Date : 05-12-94	Drawn by : DDG-304

PARTS LIST OF THE BACKBOARD

Order number of a complete board: V5634471 (Index: 00)

Order number	Description	Item
V3132333	J MD2 MBS P 6 E1AU 00	J15
V313526	J EUR2C FBT P64 E1C2S 1.6 00	J1 ,J2 ,J3
V3137813	J CT H MBT P 3 M2SN WH 00	J14
V3137814	J CT H MBT P 4 M2SN WH 00	J12 ,J13
V3137816	J CT H MBT P 6 M2SN WH 00	J11
V3137822	J CT H MBT P12 M2SN WH 00	J10
V3137823	J CT H MBT P13 M2SN WH 00	J5
V3137824	J CT H MBT P14 M2SN WH 00	J4 ,J7
V3137825	J CT H MBT P15 M2SN WH 00	J6
V367401	RVT FULL_R2.4C 7.9 AL 00	0002
V752635	PCB CCID12X BCKBRD V3 00	PCB1

Pinning - Signals

SMPS (P)

to backboard

J-PB

-15V	1	J4
GND	2	J4
GND	3	J4
+8V	4	J4
+8V	5	J4
SMPSDIAG	6	J4
+15V	7	J4
DEGAUSS	8	J4
GND	9	J4
GND	10	J4
V-UNIFORM	11	J4
AX-UNIFORM	12	J4

to deflection

J-PD

-15V	1	J5
-15V	2	J5
+8V	3	J5
GND	4	J5
GND	5	J5
+15V	6	J5
+15V	7	J5
N.C.	8	J5
N.C.	9	J5
+B	10	J5

to CRT socket

J-PT

ACOK	1	J6
FIL.GND	2	J6
FIL.GND	3	J6
FIL	4	J6
FIL	5	J6
-80V	6	J6
N.C.	7	J6
N.C.	8	J6
+B'	9	J6

J-PC

-15V	1	J7
GND	2	J7
+8V	3	J7
+15V	4	J7
N.C.	5	J7

to RGB

J-PA

N.C.	1	J8
NBCL	2	J8
N.C.	3	J8
GND	4	J8
GND	5	J8
GND	6	J8
+8V	7	J8
-15V	8	J8
+15V	9	J8
+80V	10	J8
+B'	11	J8

to EHT

J-PH

NBCL	1	J9
GND	2	J9
GND	3	J9
-15V	4	J9
+15V	5	J9
N.C.	6	J9
+E	7	J9

EHT (H)

to CRT socket

J-HT

	1	J4
	2	J4
	3	J4
	4	J4
VG2	5	J4

to SMPS

J-HP

NBCL	1	J3
	2	J3
	3	J3
-15V	4	J3
+15V	5	J3
	6	J3
+E	7	J3

to deflection

J-HD

NEHTEN	1	J2
EHT STATUS	2	J2
	3	J2
EHT.INH	4	J2
VG2 ADJ	5	J2
	6	J2
	7	J2
	8	J2

DEFL (D)

to SMPS

J-DP

J1	1	-15V
J1	2	-15V
J1	3	+8V
J1	4	
J1	5	
J1	6	+15V
J1	7	
J1	8	
J1	9	
J1	10	+180V

to EHT

J-DH

J10	1	NEHTEN
J10	2	EHT.STATUS
J10	3	
J10	4	EHT.INH
J10	5	VG2ADJ
J10	6	
J10	7	
J10	8	

to backboard

J-DBa

J5	1	BOW
J5	2	SKEW
J5	3	H-PHASE
J5	4	H-AMPL
J5	5	V-STAT
J5	6	HBLR
J5	7	HBLL
J5	8	VBLADJ
J5	9	HTRAP
J5	10	VSHIFT
J5	11	HPAR
J5	12	VAMPL
J5	13	H-LINEAR
J5	14	

to convergenc

J-DR

J9	1	SDA
J9	2	SCL
J9	3	3WENABLE
J9	4	
J9	5	
J9	6	
J9	7	H.SAWT
J9	8	H.FLYBACK
J9	9	V.BL.1
J9	10	H.BL.1
J9	11	V.SAWT

to backboard

J-DBb

J11	1	VG2ADJ
J11	2	H-STAT
J11	3	
J11	4	3WENABLE
J11	5	SDA
J11	6	SCL

to RGB

J-DA

J4	1	EHT.STATUS
J4	2	S.AKBBL
J4	3	AKBSTART
J4	4	V.BL.2
J4	5	H.FLYB2
J4	6	H.BL.2
J4	7	H/C.SYNC
J4	8	
J4	9	V.SYNC

to BTC coil

J12	4	BTC COIL
J12	5	BTC COIL

to defl.yoke Hor.

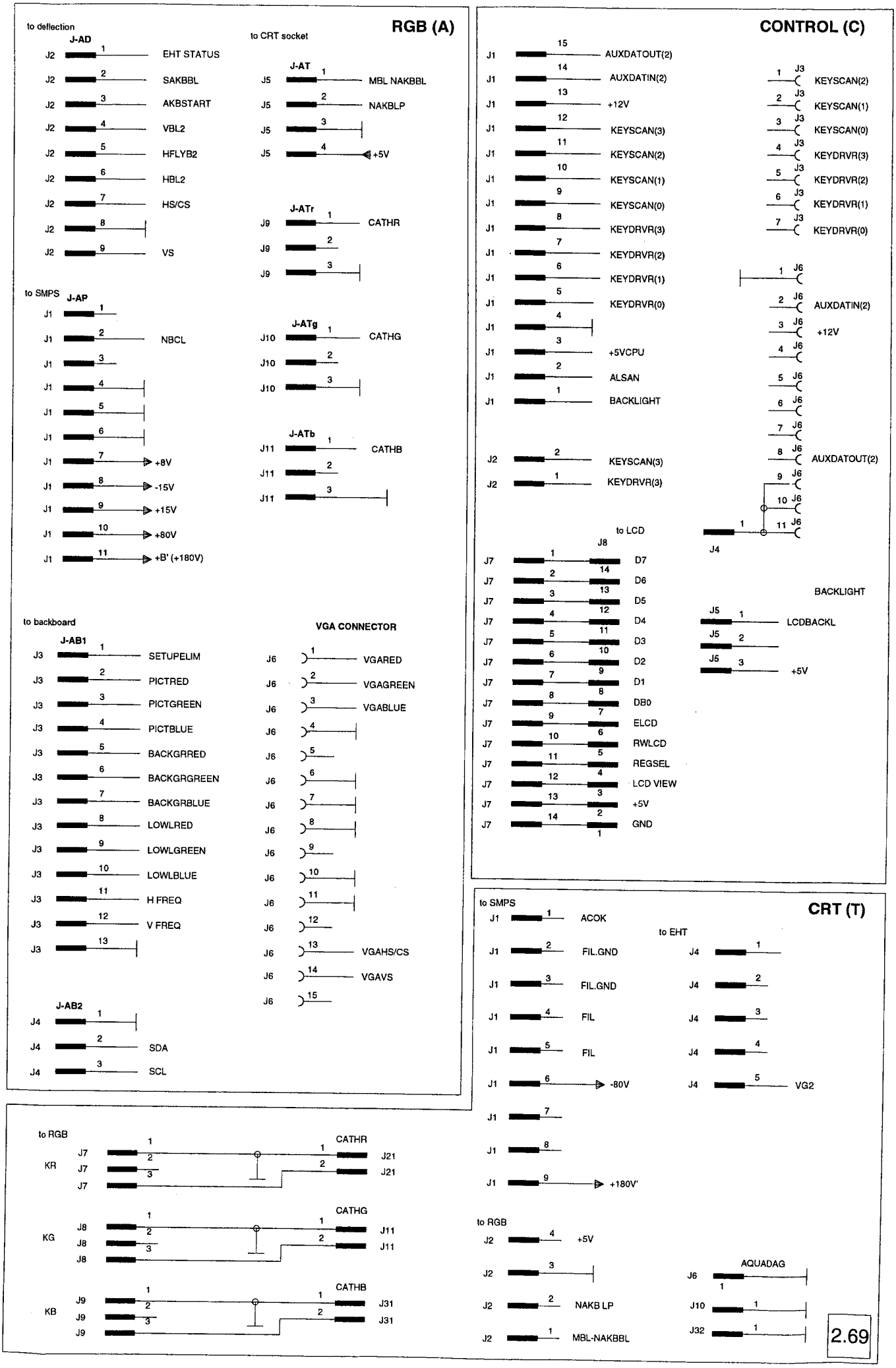
J-DY.HOR

J3	1	+180V
J3	2	+180V
J3	3	HD.L
J3	4	HD.L
J3	5	HD.H
J3	6	HD.H

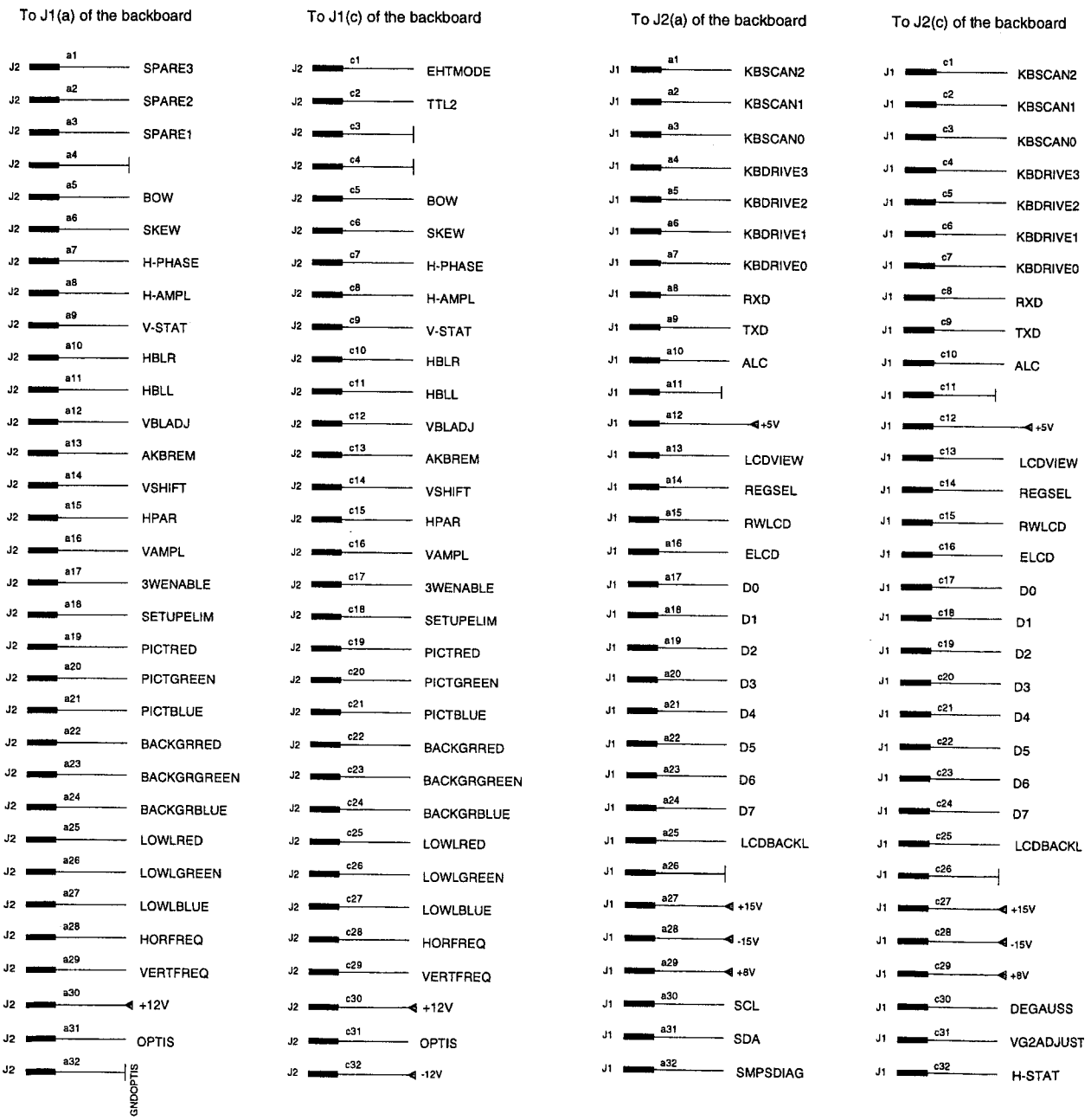
to defl. yoke Vert.

J-DY.VERT

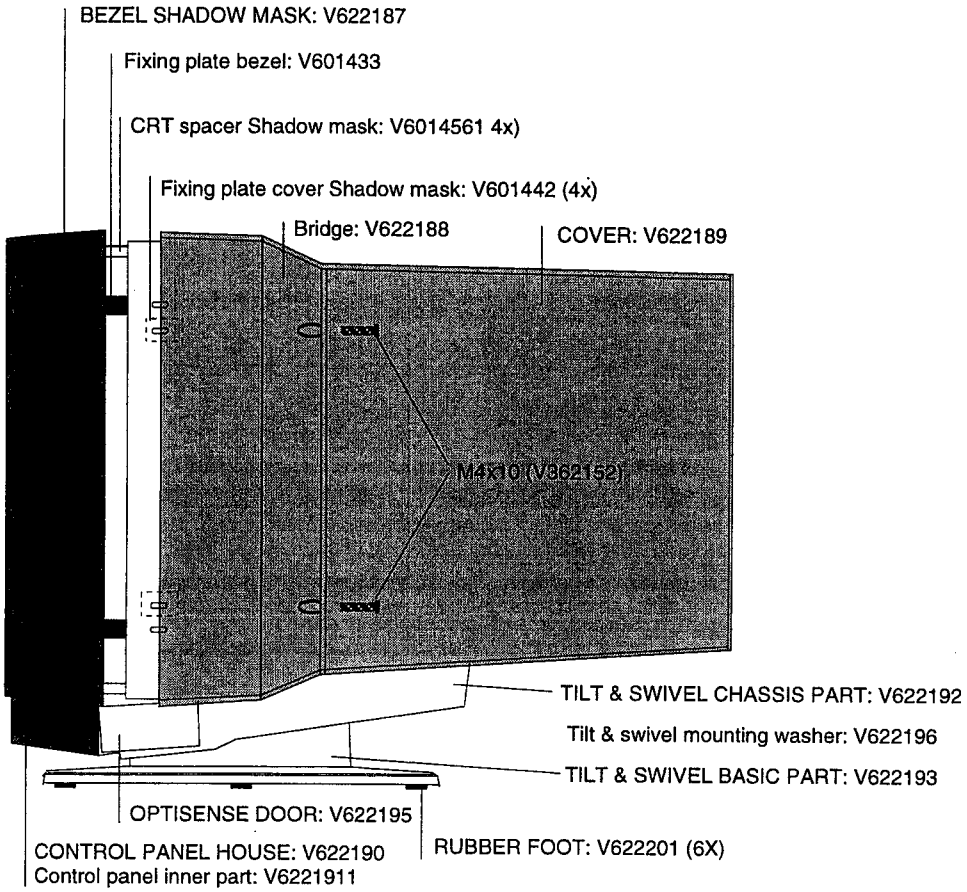
J2	1	VD.L
J2	2	VD.H
J2	3	+180V
J2	4	+180V
J2	5	GND

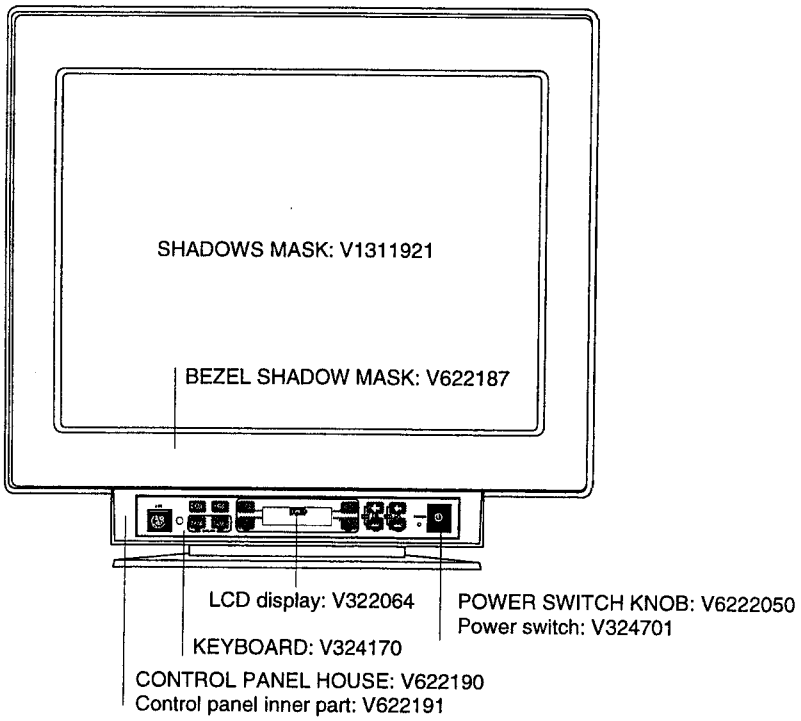

RGB (A)
to deflection
J-AD
J2 1 EHT STATUS
J2 2 SAKBBL
J2 3 AKBSTART
J2 4 VBL2
J2 5 HFLYB2
J2 6 HBL2
J2 7 HS/CS
J2 8
J2 9 VS
to SMPS
J-AP
J1 1
J1 2 NBCL
J1 3
J1 4
J1 5
J1 6
J1 7 +8V
J1 8 -15V
J1 9 +15V
J1 10 +80V
J1 11 +B' (+180V)
to CRT socket
J-AT
J5 1 MBL NAKBBL
J5 2 NAKBLP
J5 3
J5 4 +5V
J-ATr
J9 1 CATHR
J9 2
J9 3
J-ATg
J10 1 CATHG
J10 2
J10 3
J-ATb
J11 1 CATHB
J11 2
J11 3
to backboard
J-AB1
J3 1 SETUPELIM
J3 2 PICTRED
J3 3 PICTGREEN
J3 4 PICTBLUE
J3 5 BACKGRRED
J3 6 BACKGRGREEN
J3 7 BACKGRBLUE
J3 8 LOWLRED
J3 9 LOWLGREEN
J3 10 LOWLBLUE
J3 11 H FREQ
J3 12 V FREQ
J3 13
J-AB2
J4 1
J4 2 SDA
J4 3 SCL
VGA CONNECTOR
J6 1 VGARED
J6 2 VGAGREEN
J6 3 VGABLUE
J6 4
J6 5
J6 6
J6 7
J6 8
J6 9
J6 10
J6 11
J6 12
J6 13 VGAHS/CS
J6 14 VGAVS
J6 15
CONTROL (C)
J1 15 AUXDATOUT(2)
J1 14 AUXDATIN(2)
J1 13 +12V
J1 12 KEYSCAN(3)
J1 11 KEYSCAN(2)
J1 10 KEYSCAN(1)
J1 9 KEYSCAN(0)
J1 8 KEYDRVR(3)
J1 7 KEYDRVR(2)
J1 6 KEYDRVR(1)
J1 5 KEYDRVR(0)
J1 4
J1 3 +5VCPU
J1 2 ALSAN
J1 1 BACKLIGHT
J2 2 KEYSCAN(3)
J2 1 KEYDRVR(3)
J3 1 KEYSCAN(2)
J3 2 KEYSCAN(1)
J3 3 KEYSCAN(0)
J3 4 KEYDRVR(3)
J3 5 KEYDRVR(2)
J3 6 KEYDRVR(1)
J3 7 KEYDRVR(0)
J6 1
J6 2 AUXDATIN(2)
J6 3 +12V
J6 4
J6 5
J6 6
J6 7
J6 8 AUXDATOUT(2)
J6 9
J6 10
J6 11
J4 1
to LCD
J8
J7 1 D7
J7 2 D6
J7 3 D5
J7 4 D4
J7 5 D3
J7 6 D2
J7 7 D1
J7 8 DB0
J7 9 ELCD
J7 10 RWLCD
J7 11 REGSEL
J7 12 LCD VIEW
J7 13 +5V
J7 14 GND
BACKLIGHT
J5 1 LCDBACKL
J5 2
J5 3 +5V
CRT (T)
to SMPS
J1 1 ACOK
J1 2 FIL.GND
J1 3 FIL.GND
J1 4 FIL
J1 5 FIL
J1 6 -80V
J1 7
J1 8
J1 9 +180V'
to EHT
J4 1
J4 2
J4 3
J4 4
J4 5 VG2
to RGB
J2 4 +5V
J2 3
J2 2 NAKB LP
J2 1 MBL-NAKBBL
AQUADAG
J6 1
J10 1
J32 1
to RGB
KR
J7 1
J7 2
J7 3
CATHR
1 J21
2 J21
KG
J8 1
J8 2
J8 3
CATHG
1 J11
2 J11
KB
J9 1
J9 2
J9 3
CATHB
1 J31
2 J31
2.69

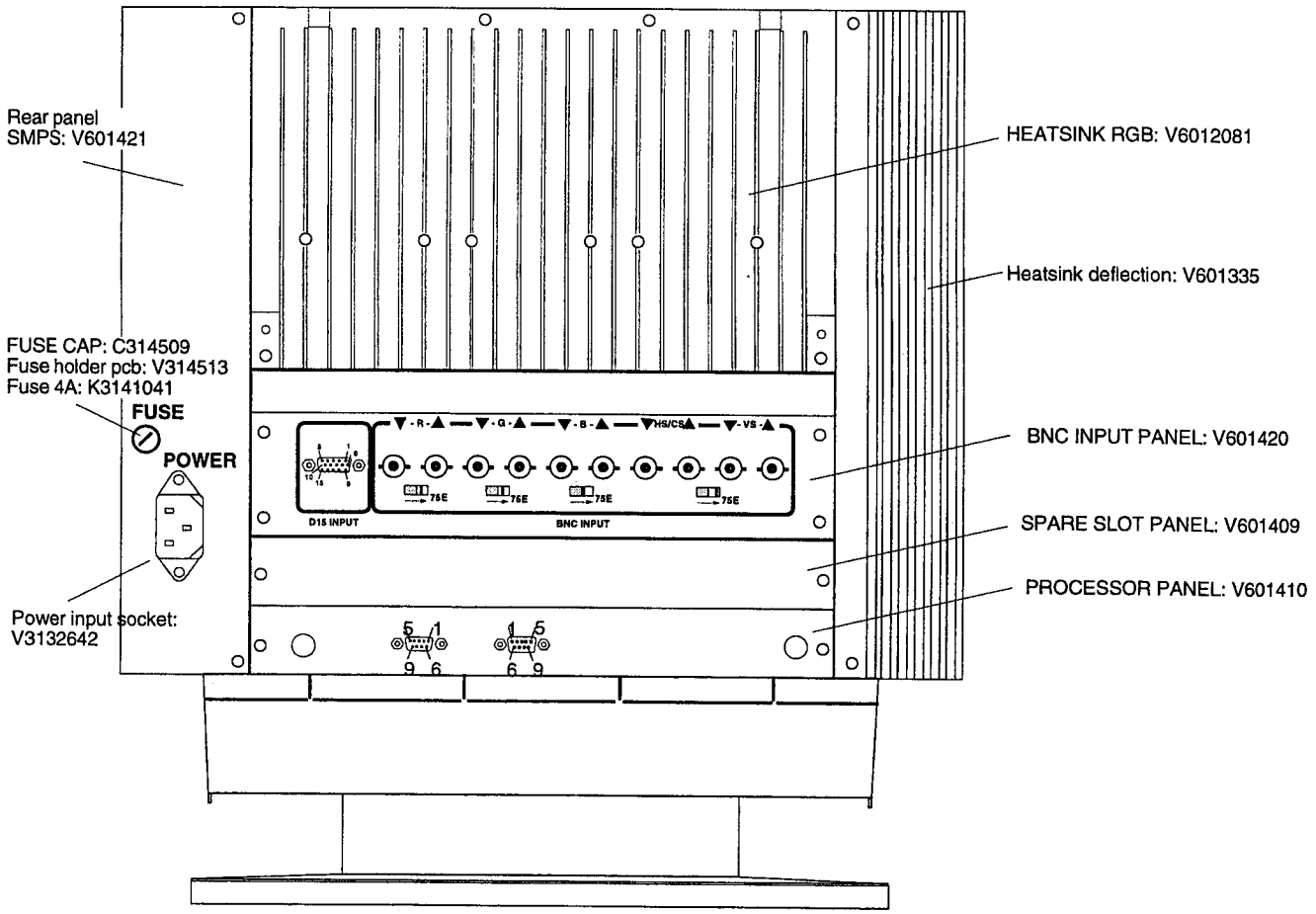
µ-Processor


To J1(a) of the backboard
J2 a1 SPARE3
J2 a2 SPARE2
J2 a3 SPARE1
J2 a4
J2 a5 BOW
J2 a6 SKEW
J2 a7 H-PHASE
J2 a8 H-AMPL
J2 a9 V-STAT
J2 a10 HBLR
J2 a11 HBLL
J2 a12 VBLADJ
J2 a13 AKBREM
J2 a14 VSHIFT
J2 a15 HPAR
J2 a16 VAMPL
J2 a17 3WENABLE
J2 a18 SETUPELIM
J2 a19 PICTRED
J2 a20 PICTGREEN
J2 a21 PICTBLUE
J2 a22 BACKGRRED
J2 a23 BACKGRGREEN
J2 a24 BACKGRBLUE
J2 a25 LOWLRED
J2 a26 LOWLGREEN
J2 a27 LOWLBLUE
J2 a28 HORFREQ
J2 a29 VERTFREQ
J2 a30 +12V
J2 a31 OPTIS
J2 a32 GNDOPTIS
To J1(c) of the backboard
J2 c1 EHTMODE
J2 c2 TTL2
J2 c3
J2 c4
J2 c5 BOW
J2 c6 SKEW
J2 c7 H-PHASE
J2 c8 H-AMPL
J2 c9 V-STAT
J2 c10 HBLR
J2 c11 HBLL
J2 c12 VBLADJ
J2 c13 AKBREM
J2 c14 VSHIFT
J2 c15 HPAR
J2 c16 VAMPL
J2 c17 3WENABLE
J2 c18 SETUPELIM
J2 c19 PICTRED
J2 c20 PICTGREEN
J2 c21 PICTBLUE
J2 c22 BACKGRRED
J2 c23 BACKGRGREEN
J2 c24 BACKGRBLUE
J2 c25 LOWLRED
J2 c26 LOWLGREEN
J2 c27 LOWLBLUE
J2 c28 HORFREQ
J2 c29 VERTFREQ
J2 c30 +12V
J2 c31 OPTIS
J2 c32 -12V
To J2(a) of the backboard
J1 a1 KBSCAN2
J1 a2 KBSCAN1
J1 a3 KBSCAN0
J1 a4 KBDRIVE3
J1 a5 KBDRIVE2
J1 a6 KBDRIVE1
J1 a7 KBDRIVE0
J1 a8 RXD
J1 a9 TXD
J1 a10 ALC
J1 a11
J1 a12 +5V
J1 a13 LCDVIEW
J1 a14 REGSEL
J1 a15 RWLCD
J1 a16 ELCD
J1 a17 D0
J1 a18 D1
J1 a19 D2
J1 a20 D3
J1 a21 D4
J1 a22 D5
J1 a23 D6
J1 a24 D7
J1 a25 LCDBACKL
J1 a26
J1 a27 +15V
J1 a28 -15V
J1 a29 +8V
J1 a30 SCL
J1 a31 SDA
J1 a32 SMPSDIAG
To J2(c) of the backboard
J1 c1 KBSCAN2
J1 c2 KBSCAN1
J1 c3 KBSCAN0
J1 c4 KBDRIVE3
J1 c5 KBDRIVE2
J1 c6 KBDRIVE1
J1 c7 KBDRIVE0
J1 c8 RXD
J1 c9 TXD
J1 c10 ALC
J1 c11
J1 c12 +5V
J1 c13 LCDVIEW
J1 c14 REGSEL
J1 c15 RWLCD
J1 c16 ELCD
J1 c17 D0
J1 c18 D1
J1 c19 D2
J1 c20 D3
J1 c21 D4
J1 c22 D5
J1 c23 D6
J1 c24 D7
J1 c25 LCDBACKL
J1 c26
J1 c27 +15V
J1 c28 -15V
J1 c29 +8V
J1 c30 DEGAUSS
J1 c31 VG2ADJUST
J1 c32 H-STAT

MECHANICAL PARTS


BEZEL SHADOW MASK: V622187
Fixing plate bezel: V601433
CRT spacer Shadow mask: V6014561 4x)
Fixing plate cover Shadow mask: V601442 (4x)
Bridge: V622188
COVER: V622189
M4X10 (V362152)
TILT & SWIVEL CHASSIS PART: V622192
Tilt & swivel mounting washer: V622196
TILT & SWIVEL BASIC PART: V622193
OPTISENSE DOOR: V622195
CONTROL PANEL HOUSE: V622190
Control panel inner part: V6221911
RUBBER FOOT: V622201 (6X)





MECHANICAL PARTS CCID 121 VERSION 4

V107624	R THV T100M L 3W4 17500	FOCUS UNIT
V302104	CORE TUBE 16 / 9 X28	CORE WIRING
C312000	SPG EXTEN 50 D7 D0.6 ST	PCB CONNECTOR
V3131021	J CIRC ACC CAP M BK	8-PINS MINI DIN CONNECTOR
V313315	BSHG OPCL D15.9/11.5 BLK	BUSHING
V313610	J SL CONTACT AWG24-18 SN	WIRE CONTACT
V3136105	J SL KEYING PLUG	CONNECTOR KEY
V313611	J SL HSG LR P 3 M3.96	HOUSING CONNECTOR
V322064	LCD C 16CH- 2L LED BL	LCD SCREEN
V324170	SW KYBD CCID 12X / 9X74	KEYBOARD (CONTROL)
K3440272	CD RECRNG 1015AWG18YG 290	WIRING UNIT AMP/SOLDERLUG 290MM
V346994	SLVU SHR D4.8/2.4 BK 20	SLEEVE SHRINK
V348000	CBLA TIE B L 98 W2.5	CABLE TIE
V3480261	EDGING SADDLE EDS-1	CABLE FASTNER (PLATE MOUNTING)
V3480602	CBLA SADDLE WS-2NS	CABLE SADDLE (PLATE MOUNTING)
Z3480701	CBLA CLP D 4 L16 W10 M 3	CABLE CLAMP
V3480741	RVT SNAP 5 C 2.5 PLPLBK	CABLE TIE RIVET
K34808402	GRMT T1.5 C_SOL L02 BLK	GROMMET 2MM
K34808405	GRMT T1.5 C_SOL L05 BLK	GROMMET 5MM
V348085	FTG O-RING158.12X4 PTFE	CABLE FIXING
V3480962	CBLA CLP LS-10	WIRING SADDLE

Z3484133	CD CT FTFT P13 570	WIRING UNIT 13 WIRES 570MM
V3484142	CD CT $FTMT P14 750	WIRING UNIT 14 WIRES 750MM
V34841512	CD CT $FTMT P15 750	WIRING UNIT 15 WIRES 750MM
Z3485039	CD CT FTFT P 3 480	WIRING UNIT 3 WIRES 480MM
Z3485098	CD CT FTFT P 9 875	WIRING UNIT 9 WIRES 875MM
V3493741	CD FL $MSMS P14 60	WIRING UNIT 14 WIRES 60MM
Z3494920	CD HV 1K AWG20ST SL 220	WIRING UNIT 1 WIRE 220MM
V3495023	CD CT FT P 2 150	WIRING UNIT 2 WIRES 150MM
V3495038	CD CT $FT P 3 80	WIRING UNIT 3 WIRES 80MM
V349504	CD CT FTFT P 4 400	WIRING UNIT 4 WIRES 400MM
V3495062	CD CT FTFT P 6 480	WIRING UNIT 6 WIRES 480MM
V3495073	CD CT FTFT P 7 820	WIRING UNIT 7 WIRES 820MM
V3495085	CD CT FTFT P 8 450	WIRING UNIT 8 WIRES 450MM
V3495095	CD CT FTFT P 9 530	WIRING UNIT 9 WIRES 530MM
V3495105	CD CT FTFT P10 500	WIRING UNIT 10 WIRES 500MM
V3495111	CD CT FTFT P11 470	WIRING UNIT 11 WIRES 470MM
V3495127	CD CT FTFT P12 650	WIRING UNIT 12 WIRES 650MM
V3495142	CD CT FTFT P14 520	WIRING UNIT 14 WIRES 520MM
V349517	CD CT $FTFT P 5 260	WIRING UNIT 5 WIRES 260MM
V3495191	CD CT $FTFT P 3 80	WIRING UNIT 3 WIRES 80MM
V349637	CD BRAID REC2.8RNG4 45	WIRING UNIT AMP/SOLDERGUG 45MM
V349667	CD CCID121 H DEFL XXX	WIRING UNIT HOR DEFLECTION
V349668	CD CCID121 V DEFL XXX	WIRING UNIT VERT DEFLECTION
Z349676	CD CT TF 4AWG26P 4/8 600	WIRING UNIT 4 WIRES 4/8PINS CONN
R358061	FSTN LATCH TOUCH 1.8-3.2	TOUCH LATCH (OPTISENSE)
K3615075	SCR HILO_R 3.2X 8.5STBK	SCREW
K3615085	SCR HILO_R 3.2X 16 STBK	SCREW
V361912	SCR D965 M 3 X 6 STZN	SCREW
V362120	SCR D7985 M 3 X 4 STZN	SCREW
V362121	SCR D7985 M 3 X 6 STZN	SCREW
V362123	SCR D7985 M 3 X 10 STZN	SCREW
V362125	SCR D7985 M 3 X 16 STZN	SCREW
V362127	SCR D7985 M 3 X 20 STZN	SCREW
V362150	SCR D7985 M 4 X 6 STZN	SCREW
V362151	SCR D7985 M 4 X 8 STZN	SCREW
V362152	SCR D7985 M 4 X 10 STZN	SCREW
V362199	SCR Z7985 M 3 X 8 STZN	SCREW
V363636	SCR PLAS_R 4 X 16 STZN	SCREW
V363637	SCR PLAS_R 5 X 25 STZN	SCREW
V366104	NUT D934 M 5 STZN	NUT
V3673761	SPR D9021 D 3.2D 9 STZN	WASHER
V367378	SPR D125B D 4.3D 9 STZN	WASHER
V3673792	SPR D7349 D 5.3D15 STZN	WASHER
V367455	RVT BLND_R3.2C 4.8 STAL	RIVET
V367502	SPR D6798AD 3.2D 6 STZN	WASHER
V367503	SPR D6798AD 4.3D 8 STZN	WASHER
V367504	SPR D6798AD 5.3D10 STZN	WASHER
V3953692	TAPE PE 0.05 330 BL	TAPE (BLUE)
V5634503	ASSEMBLY CHAS CCID121 V3	PREMOUNTED CHASSIS CONTAINS:
V313328	BSHG SNAP D38/33.3 BLK	BUSHING
V313329	BSHG SNAP D30/24 BLK	BUSHING
V3133451	SPR PCB L6 KGES	SPACER
V3133501	SPR PCB L4 MPS	SPACER
V348000	CBL ACC TIE B L 98 W2.5	CABLE TIE
V3480262	EDGING SADDLE EDS-2	CABLE FASTNER
V3480602	CBL ACC SADDLE WS-2NS	WIRING SADDLE (PLATE MOUNTING)

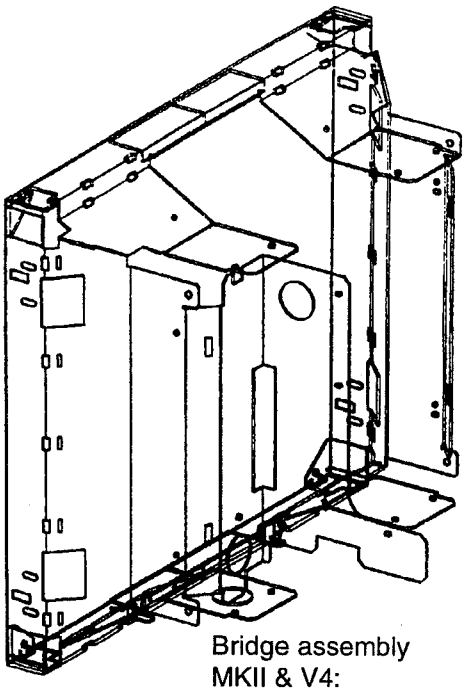
V3480721	CBL ACC TIE FIX TM1S6	CABLE TIE FIXING
V348086	CBL ACC CLP D3.5/12.0HV	CABLE CLAMP
V3581352	G PCB L 80	PCB GUIDE
V361923	SCR D965 M4X8 SZ	SCREW
V362121	SCR D7985 M3X6 SZ	SCREW
V362150	SCR D7985 M4X6 SZ	SCREW
V3623402	SCR D933 M5X50 SZ	SCREW
V367457	RVT POP D3.2 L11.6 P SS	RIVET
V601424	FRM CCID12X BOTTOMPL	CHASSIS BOTTOMPLATE
V601425	CHASSIS UPPERPLATE	CHASSIS TOPPLATE
V6014401	SHIELDING RGB CCID12X V3	SHIELDING RGB
V6014461	BRIDGE ASSY CCID121 V3	BRIDGE ASSEMBLY
V601454	DIVIDING WALL	SHIELD EHT/CRT NECK
V6014561	DISTANCE PIECE 36.5	CRT SPACER
V601701	WASHER BB FIXATION CH100	CRT FIXING WASHER
V6030961	SCR.CAPT M3X8	CAPTIVE SCREW
V6030963	SCR.CAPT M3 SPRING	CAPTIVE SCREW SPRING

V5900021	LBL S TUV-GS		LABEL
V5900022	LBL S TUV-ERGO		LABEL
V5900181	LBL CCID12X V2		LABEL
V590019	LBL CCID12X V3		LABEL
V590216	LBL S GROUND	YL	LABEL

C9825464	PREMOUNTED CABLE DRUM CONTAINS:	
V601447	CABLE DRUM SPR	CH100
V601460	CABLE DRUM WASHER	CH100
V601463	CABLE DRUM FINGER	CH100
V622213	CABLE DRUM SUPPORT	CH100
V622214	CABLE DRUM	CH100
V3496701	CABLE OPTISENSE	

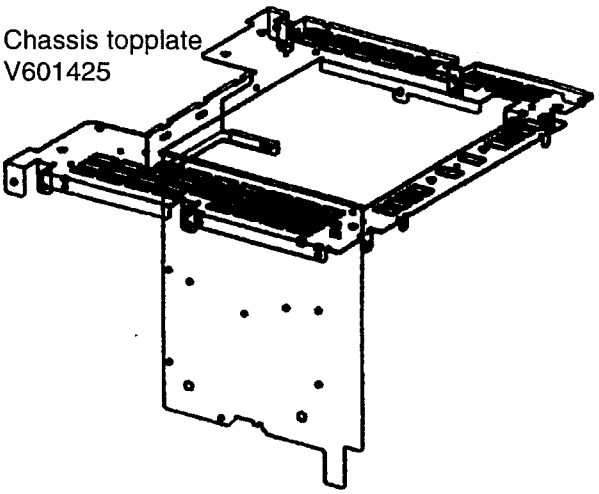
V6030961	SCR CUST_RM 3 X 8 SS	CAPTIVE SCREW
V6030963	SCR ACC M 3 SPRING	CAPTIVE SCREW SPRING
V622182	ISOLATION PLATE EHT CH100	ISOLATION PLATE EHT

C660193	CDU C660193 CDU AKWAD C	AQUADAG
V775416	COIL DEGAUSS CH100	DEGAUSS COIL
V775417	COIL CH100 W.U.	WHITE UNIFORMITY COIL

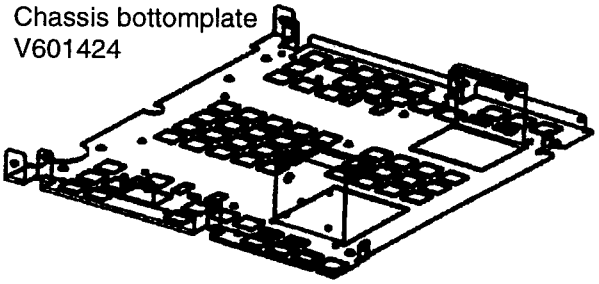


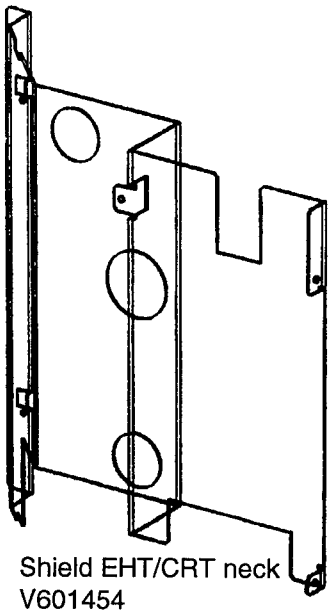
Bridge assembly
MKII & V4:
V6014461

Chassis topplate
V601425



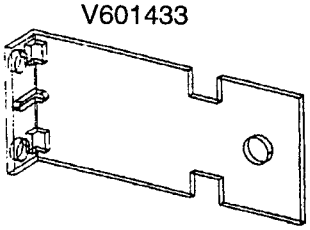
Chassis bottomplate
V601424



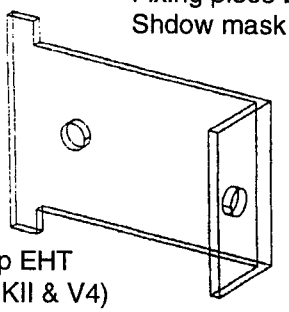


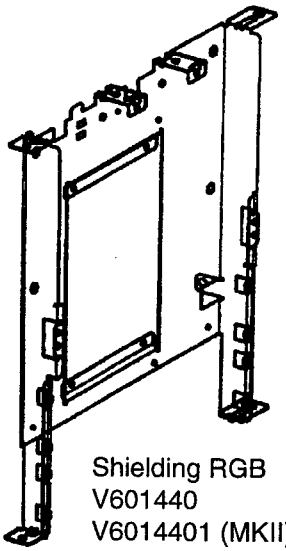
Shield EHT/CRT neck
V601454

Fixing piece housing
V601433



Fixing piece bezel
Shdow mask V601442

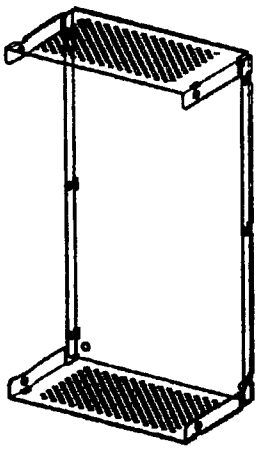


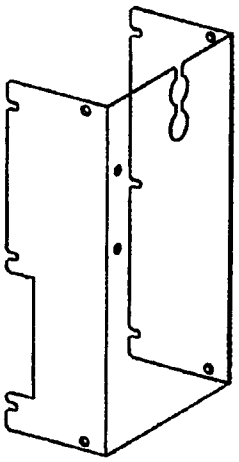


Shielding RGB
V601440
V6014401 (MKII)

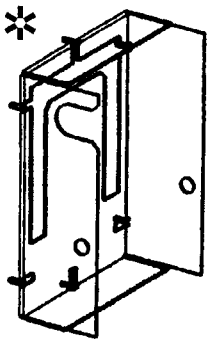
Ground plate EHT
V6014531 (MKII & V4)

Screening cap EHT
V6014512 (MKII & V4)

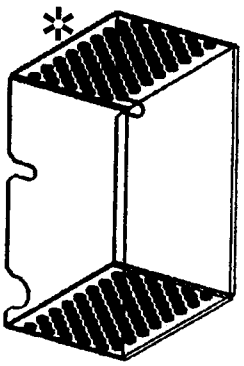




Shielding EHT ground plate
V6014520

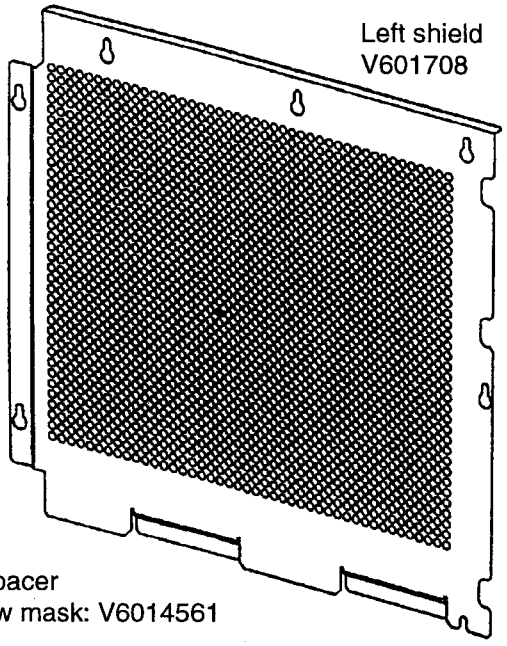


Shielding EHT cover
V601452



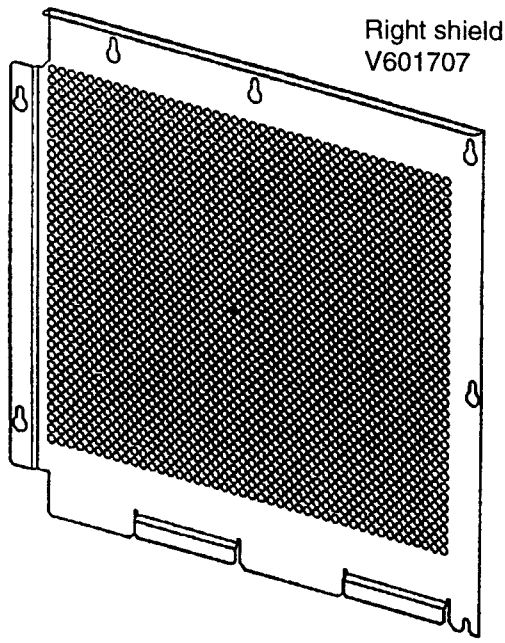
Illustrations not in proportion

✲ replaced by one part for MKII & V4 see last page

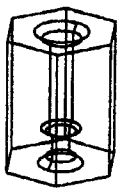


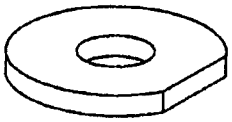
Left shield
V601708

CRT spacer
Shadow mask: V6014561

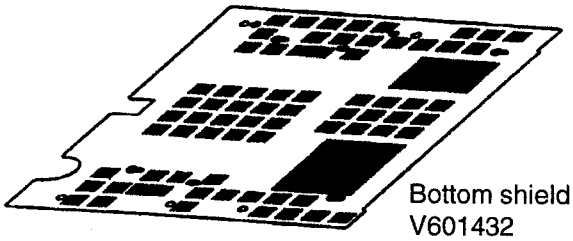


Right shield
V601707



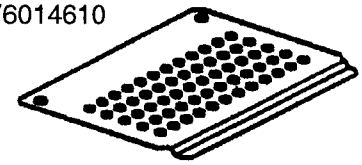


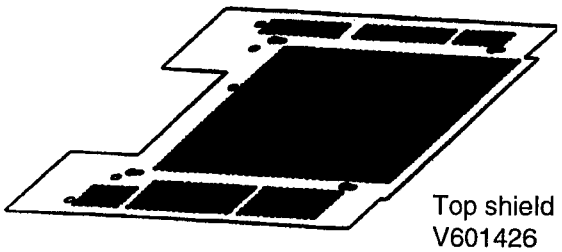
CRT fixing washer
V601701



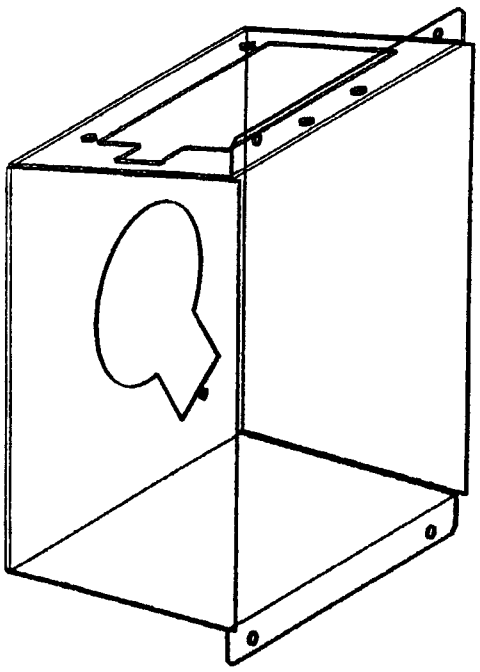
Bottom shield
V601432

CRT socket shielding plate
V6014610

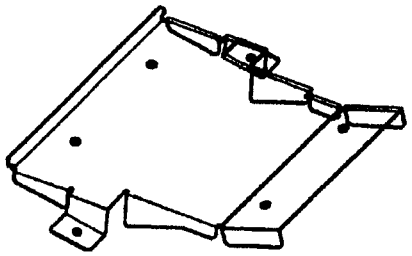




Top shield
V601426



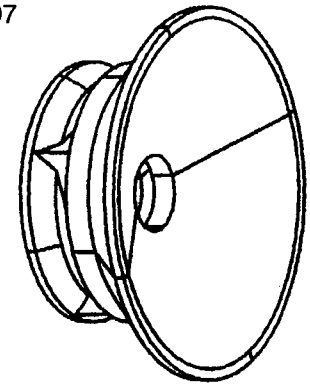
CRT socket shielding house
Shadow mask: V6014612



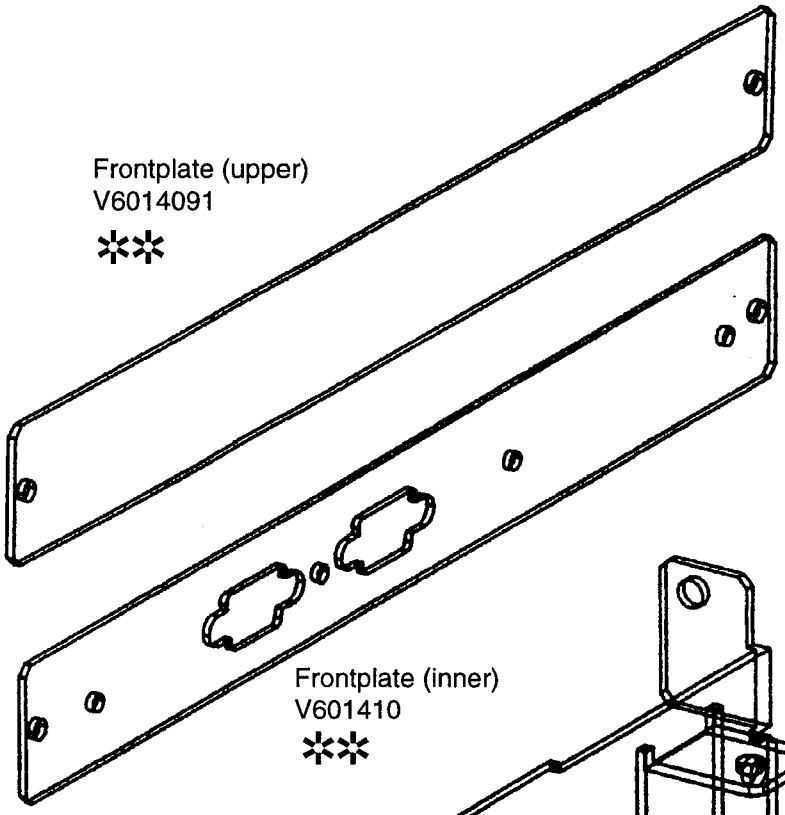
Anode cap shield
Shadow mask: V601417

Illustrations not in proportion

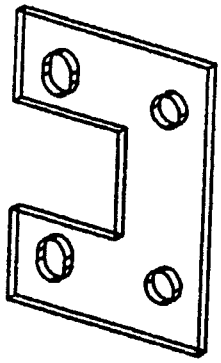
Optisensense® sucking cup
V622197



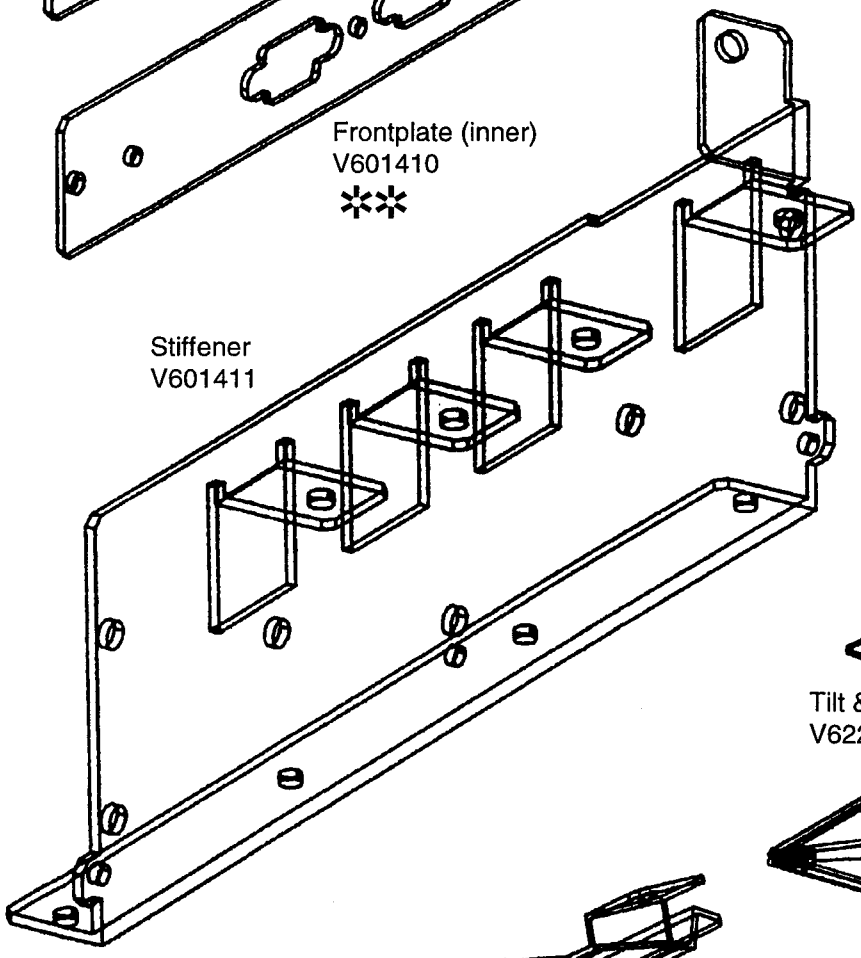
Frontplate (upper)
V6014091
✲✲



Fixing plate power switch
V601457
✲✲

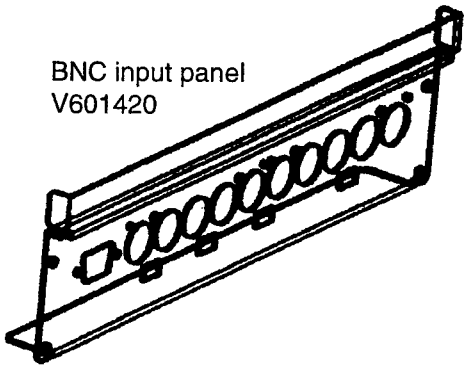


Frontplate (inner)
V601410
✲✲

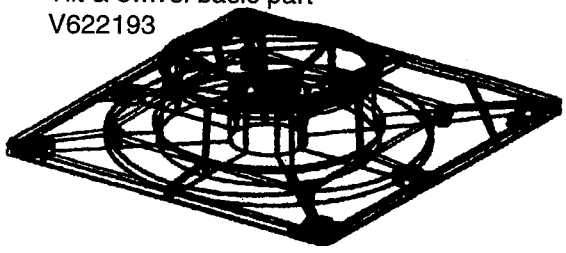


Stiffener
V601411

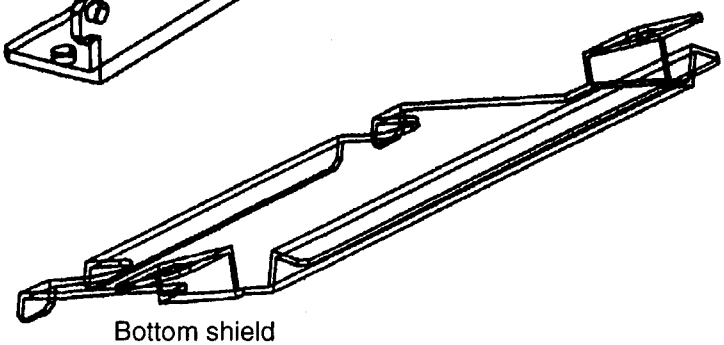
BNC input panel
V601420

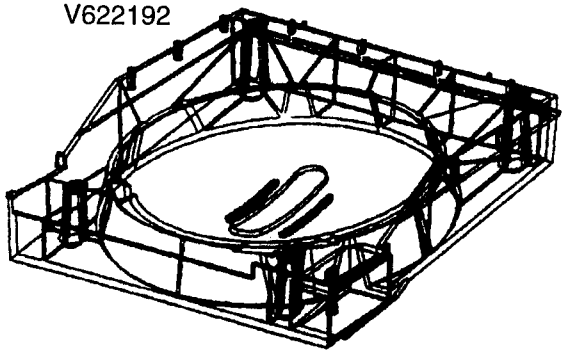


Tilt & swivel basic part
V622193



Tilt & swivel lower part
V622192



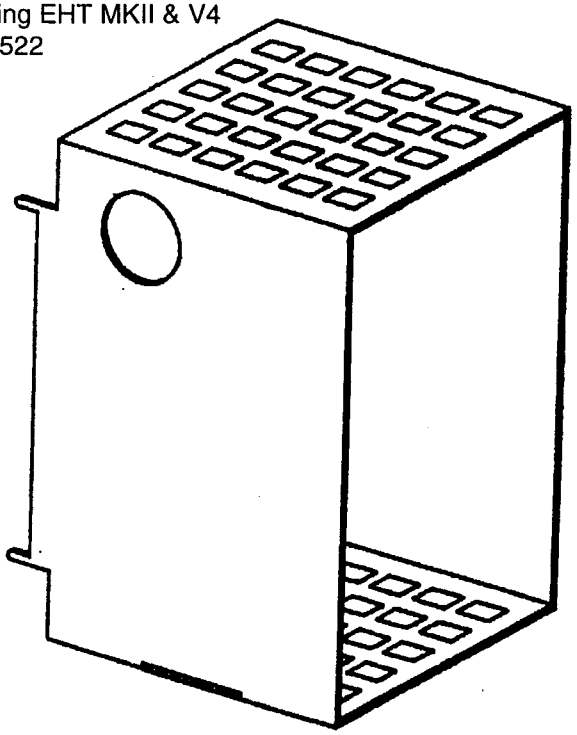


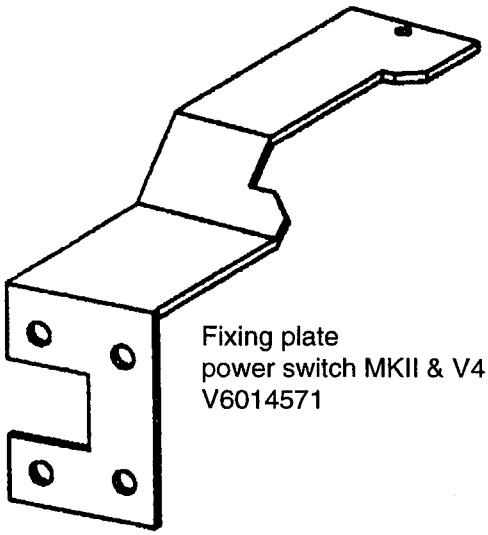
Bottom shield
Shadow mask: V601459

Illustrations not in proportion

✲✲ New illustration for MKII & V4

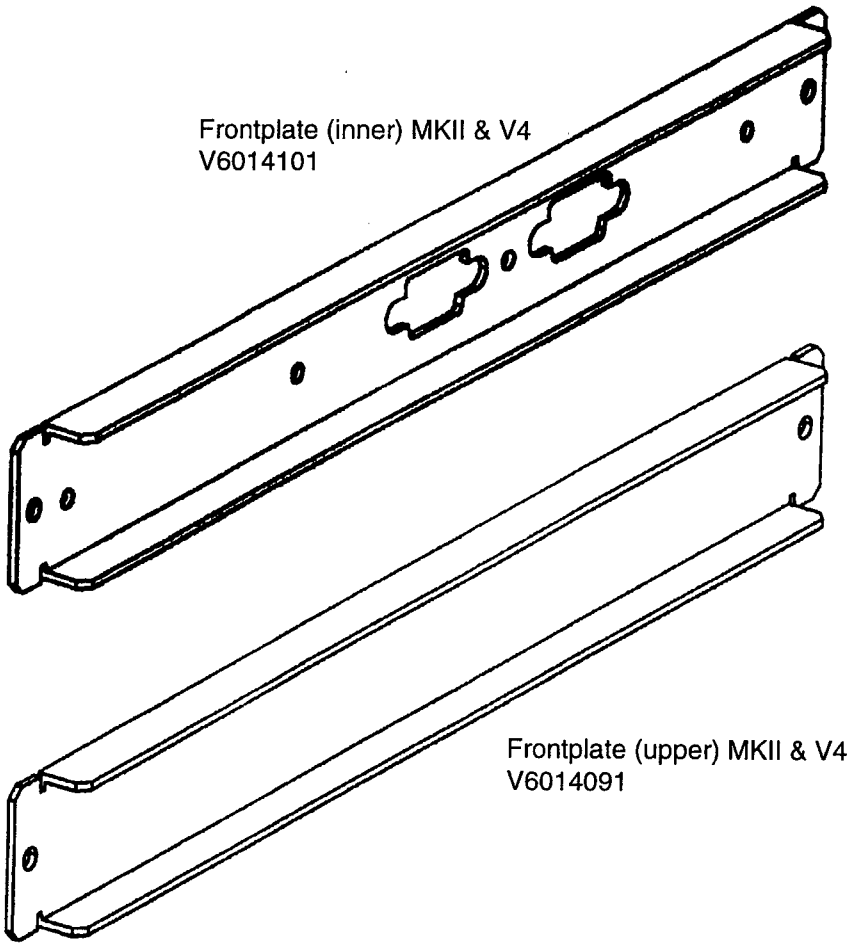
Shielding EHT MKII & V4
V6014522





Fixing plate
power switch MKII & V4
V6014571

Frontplate (inner) MKII & V4
V6014101



Frontplate (upper) MKII & V4
V6014091

Illustrations not in proportion

Viewing enhancer mounting for CCID120T - CCID121

- Remove one of the protective layers of a piece of Velcro.
- Stick it to the bezel as shown in figure 1.

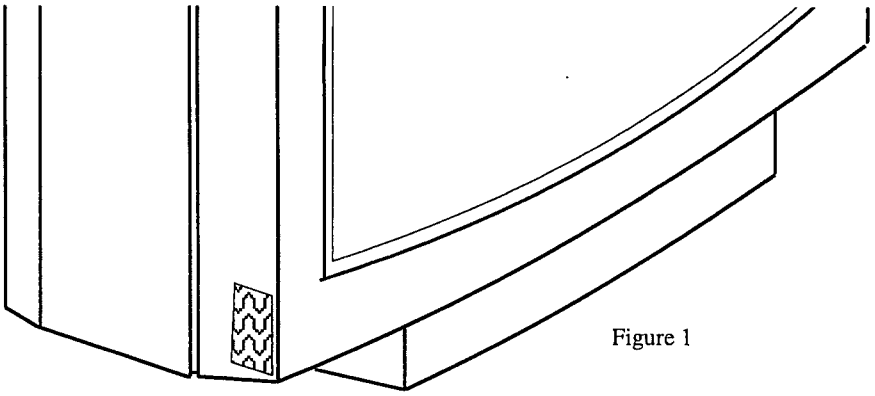


Figure 1

- Repeat this at the other side.
- Now remove the other protective layers.
- Take the viewing enhancer at both sides.
- Lift it till you reach the top of the display.
- Carefully adjust until you can hook the collar of the enhancer behind the bezel (see detail in figure 2). Adjust the width so that the viewing enhancer doesn't touch the Velcro yet.
- Slide the viewing enhancer carefully down till it fits, and firmly press the sides of the viewing enhancer against the bezel of the display. The Velcro will stick to the viewing enhancer on the right place.

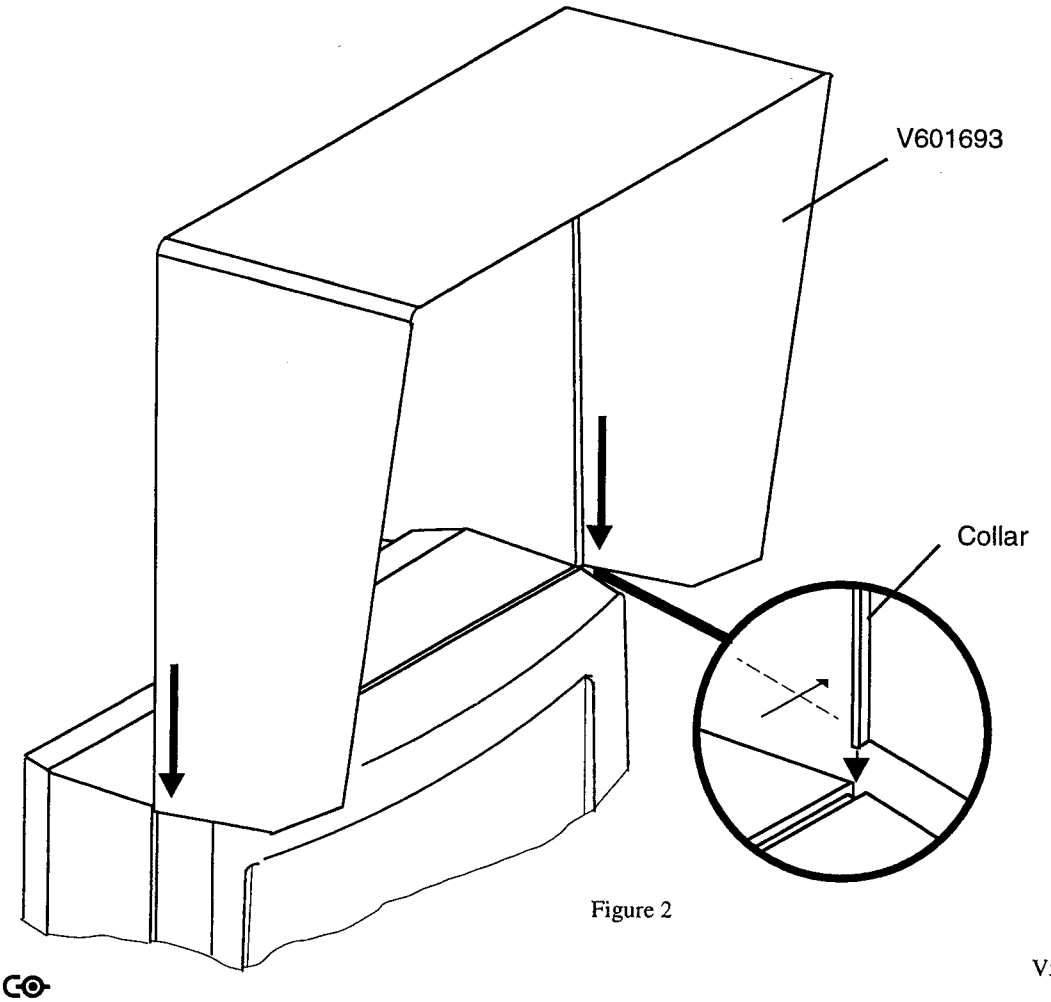
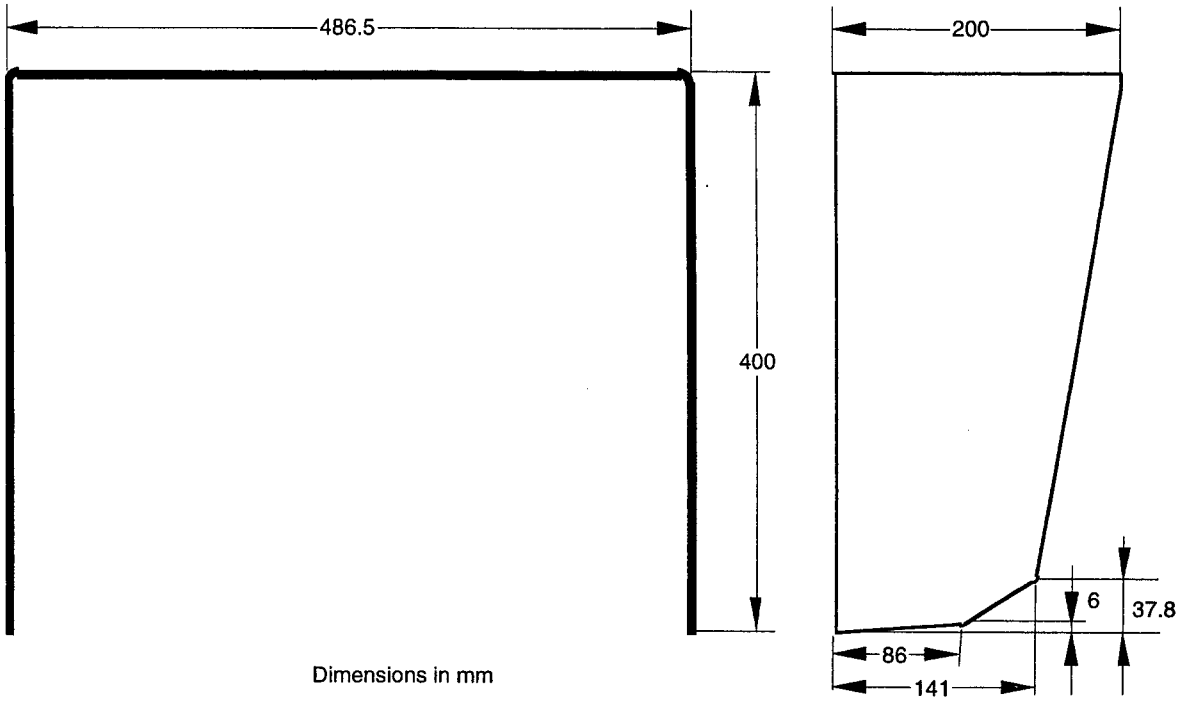


Figure 2

Dimensions:



Dimensions in mm